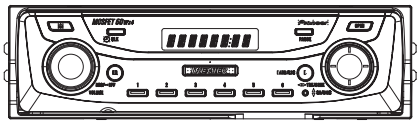
Pioneer sound.vision.soul

Service Manual



DEH-P960MP/XN/UC

ORDER NO.
CRT3191

MULTI-CD CONTROL DSP HIGH POWER CD/MP3/WMA PLAYER WITH FM/AM TUNER

DEH-P960MP/XN/UC
DEH-P9600MP/XN/UC
DEH-P9650MP/XN/ES

This service manual should be used together with the following manual(s):

Model No.	Order No.	Mech.Module	Remarks
CX-3098	CRT3179	S10WMAcode2	CD Mech. Module:Circuit Description, Mech. Description, Disassembly

For details, refer to "Important symbols for good services".

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
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ⓒ**PIONEER CORPORATION 2004**
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SAFETY INFORMATION

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.
Health & Safety Code Section 25249.6 - Proposition 65

This product contains mercury. Disposal of this material may be regulated due to environmental considerations. For disposal or recycling information, please contact your local authorities or the Electronics Industries Alliance: www.eiae.org.

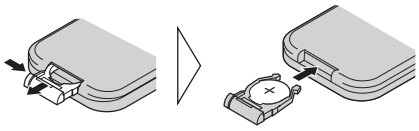
● CD Section Precaution

1. Before disassembling the unit, be sure to turn off the power. Unplugging and plugging the connectors during power-on mode may damage the ICs inside the unit.
2. To protect the pickup unit from electrostatic discharge during servicing, take an appropriate treatment (shorting-solder) by referring to "the DISASSEMBLY" on page 68.
3. After replacing the pickup unit, be sure to check the grating. (See p.64.)

ES

Battery

Slide the tray out on the back of the remote controller and insert the battery with the (+) and (–) poles pointing in the proper direction.



Note :

- Use a CR2025 (3V) lithium battery only. Never use other types of battery with this unit.

CAUTION

Danger of explosion if battery is incorrectly replaced. Replaced only with the same or equivalent type.

[Important symbols for good services]
In this manual, the symbols shown-below indicate that adjustments, settings or cleaning should be made securely.
When you find the procedures bearing any of the symbols, be sure to fulfill them:

1. Product safety

You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

2. Adjustments

To keep the original performances of the product, optimum adjustments or specification confirmation is indispensable. In accordance with the procedures or instructions described in this manual, adjustments should be performed.

3. Cleaning

For optical pickups, tape-deck heads, lenses and mirrors used in projection monitors, and other parts requiring cleaning, proper cleaning should be performed to restore their performances.

4. Shipping mode and shipping screws

To protect the product from damages or failures that may be caused during transit, the shipping mode should be set or the shipping screws should be installed before shipping out in accordance with this manual, if necessary.

5. Lubricants, glues, and replacement parts

Appropriately applying grease or glue can maintain the product performances. But improper lubrication or applying glue may lead to failures or troubles in the product. By following the instructions in this manual, be sure to apply the prescribed grease or glue to proper portions by the appropriate amount.For replacement parts or tools, the prescribed ones should be used.

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1. SPECIFICATIONS

●DEH-P960MP/XN/UC

General

Power source ..... 14.4 V DC (10.8 – 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption
..... 10.0 A

Backup current ..... 5 mA or less

Dimensions (W × H × D):
DIN
Chassis ..... 178 × 50 × 157 mm (7 × 2 × 6-1/8 in.)
Nose ..... 188 × 58 × 28 mm (7-3/8 × 2-1/4 × 1-1/8 in.)
D
Chassis ..... 178 × 50 × 162 mm (7 × 2 × 6-3/8 in.)
Nose ..... 170 × 44 × 23 mm (6-3/4 × 1-3/4 × 7/8 in.)
Weight ..... 1.7 kg (3.7 lbs)

Audio/DSP

Continuous power output is 22 W per channel minimum into 4 ohms, both channels driven 50 to 15,000 Hz with no more than 5% THD.
Maximum power output ..... 50 W × 4
Load impedance ..... 4 Ω (4 – 8 Ω allowable)
Preout max output level/output impedance
..... 6.5 V/100Ω
Loudness contour ..... +10 dB (100 Hz), +6.5 dB (10 kHz) (volume: –30 dB)
Equalizer (13-Band Graphic Equalizer):
Frequency ..... 50/80/125/200/315/500/800 Hz
1.25/2/3.15/5/8/12.5 kHz
Equalization range ..... ±12 dB
Auto equalizer (just for standard mode):
Frequency ..... 50/80/125/200/315/500/800 Hz
1.25/2/3.15/5/8/12.5 kHz
Equalization range ..... +6 – –12 dB
Network (standard mode):
HPF (Front/rear):
Frequency ..... 50/63/80/100/125/160/200 Hz
Slope ..... 0 (Pass)/–6/–12 dB/oct
Gain ..... 0 – –24 dB/Mute
Subwoofer:
Frequency ..... 50/63/80/100/125/160/200 Hz
Slope ..... –6/–12/–18 dB/oct
Gain ..... +6 – –24 dB
Phase ..... Normal/Reverse
Network (3-way network mode):
High HPF:
Frequency ..... 1.6/2/2.5/3.15/4/5/6.3/8/10/12.5/16 kHz
Slope ..... –6/–12/–18/–24 dB/oct
Gain ..... 0 – –24 dB/Mute
Phase ..... Normal/Reverse
Mid HPF/LPF:
Frequency (LPF) ... 1.6/2/2.5/3.15/4/5/6.3/8/10/12.5/16 kHz
Frequency (HPF)
..... 31.5/40/50/63/80/100/125/160/200 Hz
Slope ..... 0 (Pass)/–6/–12/–18/–24 dB/oct
Gain ..... 0 – –24 dB/Mute
Phase ..... Normal/Reverse
Low LPF:
Frequency ..... 31.5/40/50/63/80/100/125/160/200 Hz
Slope ..... –12/–18/–24/–30/–36 dB/oct
Gain ..... +6 – –24 dB/Mute
Phase ..... Normal/Reverse

CD player

System ..... Compact disc audio system
Usable discs ..... Compact disc
Signal format:
Sampling frequency ..... 44.1 kHz
Number of quantization bits
..... 16; linear
Frequency characteristics ... 5 – 20,000 Hz (±1 dB)
Signal-to-noise ratio ..... 99 dB (1 kHz) (IHF-A network)
Dynamic range ..... 95 dB (1 kHz)
Number of channels ..... 2 (stereo)
MP3 decoding format ..... MPEG-1 & 2 Audio Layer 3
WMA decoding format ..... Ver. 7, 7.1, 8, 9 (2ch audio)
WAV signal format ..... Linear PCM & MS ADPCM

FM tuner

Frequency range ..... 87.9 – 107.9 MHz
Usable sensitivity ..... 8 dBf (0.7 μV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity ..... 10 dBf (0.9 μV/75 Ω, mono)
Signal-to-noise ratio ..... 75 dB (IHF-A network)
Distortion ..... 0.3 % (at 65 dBf, 1 kHz, stereo)
0.1 % (at 65 dBf, 1 kHz, mono)

Frequency response ..... 30 – 15,000 Hz (±3 dB)
Stereo separation ..... 45 dB (at 65 dBf, 1 kHz)
Selectivity ..... 80 dB (±200 kHz)
Three-signal intermodulation (desired signal level) ..... 30 dBf (two undesired signal level: 100 dBf)

AM tuner

Frequency range ..... 530 – 1,710 kHz (10 kHz)
Usable sensitivity ..... 18 μV (S/N: 20 dB)
Signal-to-noise ratio ..... 65 dB (IHF-A network)

Note

Specifications and the design are subject to possible modifications without notice due to improvements. ▣

●DEH-P9600MP/XN/UC

General

Power source ..... 14.4 V DC (10.8 – 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption ..... 10.0 A
Backup current ..... 5 mA or less

Dimensions (W × H × D):
- DIN
  - Chassis ..... 178 × 50 × 157 mm (7 × 2 × 6-1/8 in.)
  - Nose ..... 188 × 58 × 28 mm (7-3/8 × 2-1/4 × 1-1/8 in.)
- D
  - Chassis ..... 178 × 50 × 162 mm (7 × 2 × 6-3/8 in.)
  - Nose ..... 170 × 44 × 23 mm (6-3/4 × 1-3/4 × 7/8 in.)

Weight ..... 1.7 kg (3.7 lbs)

Audio/DSP

Continuous power output is 22 W per channel minimum into 4 ohms, both channels driven 50 to 15,000 Hz with no more than 5% THD.
Maximum power output ..... 50 W × 4
Load impedance ..... 4 Ω (4 – 8 Ω allowable)
Preout max output level/output impedance 4.0 V/100Ω
Loudness contour ..... +10 dB (100 Hz), +6.5 dB (10 kHz) (volume: –30 dB)
Equalizer (13-Band Graphic Equalizer):
- Frequency ..... 50/80/125/200/315/500/800 Hz 1.25/2/3.15/5/8/12.5 kHz
- Equalization range ..... ±12 dB

Auto equalizer:
- Frequency ..... 50/80/125/200/315/500/800 Hz 1.25/2/3.15/5/8/12.5 kHz
- Equalization range ..... +6 – –12 dB

HPF (Front/rear):
- Frequency ..... 50/63/80/100/125/160/200 Hz
- Slope ..... 0 (Pass)/–6/–12 dB/oct
- Gain ..... 0 – –24 dB/Mute

Subwoofer:
- Frequency ..... 50/63/80/100/125/160/200 Hz
- Slope ..... –6/–12/–18 dB/oct
- Gain ..... +6 – –24 dB
- Phase ..... Normal/Reverse

CD player

System ..... Compact disc audio system
Usable discs ..... Compact disc
Signal format:
- Sampling frequency ..... 44.1 kHz
- Number of quantization bits ..... 16; linear

Frequency characteristics ..... 5 – 20,000 Hz (±1 dB)
Signal-to-noise ratio ..... 99 dB (1 kHz) (IHF-A network)
Dynamic range ..... 95 dB (1 kHz)
Number of channels ..... 2 (stereo)
MP3 decoding format ..... MPEG-1 & 2 Audio Layer 3
WMA decoding format ..... Ver. 7, 7.1, 8, 9 (2ch audio)
WAV signal format ..... Linear PCM & MS ADPCM

FM tuner

Frequency range ..... 87.9 – 107.9 MHz
Usable sensitivity ..... 8 dBf (0.7 μV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity ..... 10 dBf (0.9 μV/75 Ω, mono)
Signal-to-noise ratio ..... 75 dB (IHF-A network)
Distortion ..... 0.3 % (at 65 dBf, 1 kHz, stereo) 0.1 % (at 65 dBf, 1 kHz, mono)
Frequency response ..... 30 – 15,000 Hz (±3 dB)
Stereo separation ..... 45 dB (at 65 dBf, 1 kHz)
Selectivity ..... 80 dB (±200 kHz)
Three-signal intermodulation (desired signal level) ..... 30 dBf (two undesired signal level: 100 dBf)

AM tuner

Frequency range ..... 530 – 1,710 kHz (10 kHz)
Usable sensitivity ..... 18 μV (S/N: 20 dB)
Signal-to-noise ratio ..... 65 dB (IHF-A network)

Note

Specifications and the design are subject to possible modifications without notice due to improvements. ■

●DEH-P9650MP/XN/ES

General

Rated power source ..... 14.4 V DC (allowable voltage range: 12.0 – 14.4 V DC)
Grounding system ..... Negative type
Max. current consumption ..... 10.0 A
Backup current ..... 5 mA or less
Dimensions (W × H × D):
DIN
Chassis ..... 178 × 50 × 157 mm
Nose ..... 188 × 58 × 28 mm
D
Chassis ..... 178 × 50 × 162 mm
Nose ..... 170 × 44 × 23 mm
Weight ..... 1.7 kg

Audio/DSP

Continuous power output is 22 W per channel minimum into 4 ohms, both channels driven 50 to 15,000 Hz with no more than 5% THD.
Maximum power output ..... 50 W × 4
Load impedance ..... 4 Ω (4 – 8 Ω allowable)
Preout max output level/output impedance 6.5 V/100Ω
Loudness contour ..... +10 dB (100 Hz), +6.5 dB (10 kHz) (volume: –30 dB)
Equalizer (13-Band Graphic Equalizer):
Frequency ..... 50/80/125/200/315/500/800 Hz
1.25/2/3.15/5/8/12.5 kHz
Equalization range ..... ±12 dB
Auto equalizer (just for standard mode):
Frequency ..... 50/80/125/200/315/500/800 Hz
1.25/2/3.15/5/8/12.5 kHz
Equalization range ..... +6 – –12 dB
Network (standard mode):
HPF (Front/rear):
Frequency ..... 50/63/80/100/125/160/200 Hz
Slope ..... 0 (Pass)/–6/–12 dB/oct
Gain ..... 0 – –24 dB/Mute
Subwoofer:
Frequency ..... 50/63/80/100/125/160/200 Hz
Slope ..... –6/–12/–18 dB/oct
Gain ..... +6 – –24 dB
Phase ..... Normal/Reverse
Network (3-way network mode):
High HPF:
Frequency ..... 1.6/2/2.5/3.15/4/5/6.3/8/10/12.5/16 kHz
Slope ..... –6/–12/–18/–24 dB/oct
Gain ..... 0 – –24 dB/Mute
Phase ..... Normal/Reverse
Mid HPF/LPF:
Frequency (LPF) ... 1.6/2/2.5/3.15/4/5/6.3/8/10/12.5/16 kHz
Frequency (HPF) ..... 31.5/40/50/63/80/100/125/160/200 Hz
Slope ..... 0 (Pass)/–6/–12/–18/–24 dB/oct
Gain ..... 0 – –24 dB/Mute
Phase ..... Normal/Reverse
Low LPF:
Frequency ..... 31.5/40/50/63/80/100/125/160/200 Hz
Slope ..... –12/–18/–24/–30/–36 dB/oct
Gain ..... +6 – –24 dB/Mute
Phase ..... Normal/Reverse

CD player

System ..... Compact disc audio system
Usable discs ..... Compact disc
Signal format:
Sampling frequency ..... 44.1 kHz
Number of quantization bits ..... 16; linear
Frequency characteristics ... 5 – 20,000 Hz (±1 dB)
Signal-to-noise ratio ..... 99 dB (1 kHz) (IEC-A network)
Dynamic range ..... 95 dB (1 kHz)
Number of channels ..... 2 (stereo)
MP3 decoding format ..... MPEG-1 & 2 Audio Layer 3
WMA decoding format ..... Ver. 7, 7.1, 8, 9 (2ch audio)
WAV signal format ..... Linear PCM & MS ADPCM

FM tuner

Frequency range ..... 87.5 – 108.0 MHz
Usable sensitivity ..... 8 dBf (0.7 μV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity ..... 10 dBf (0.9 μV/75 Ω, mono)
Signal-to-noise ratio ..... 75 dB (IEC-A network)
Distortion ..... 0.3 % (at 65 dBf, 1 kHz, stereo)
0.1 % (at 65 dBf, 1 kHz, mono)
Frequency response ..... 30 – 15,000 Hz (±3 dB)

Stereo separation ..... 45 dB (at 65 dBf, 1 kHz)

AM tuner

Frequency range ..... 531 – 1,602 kHz (9 kHz)
530 – 1,640 kHz (10 kHz)
Usable sensitivity ..... 18 μV (S/N: 20 dB)
Signal-to-noise ratio ..... 65 dB (IEC-A network)

Infrared remote control

Wavelength ..... 940 nm ±50 nm
Output ..... typ; 12 mw/sr per Infrared LED

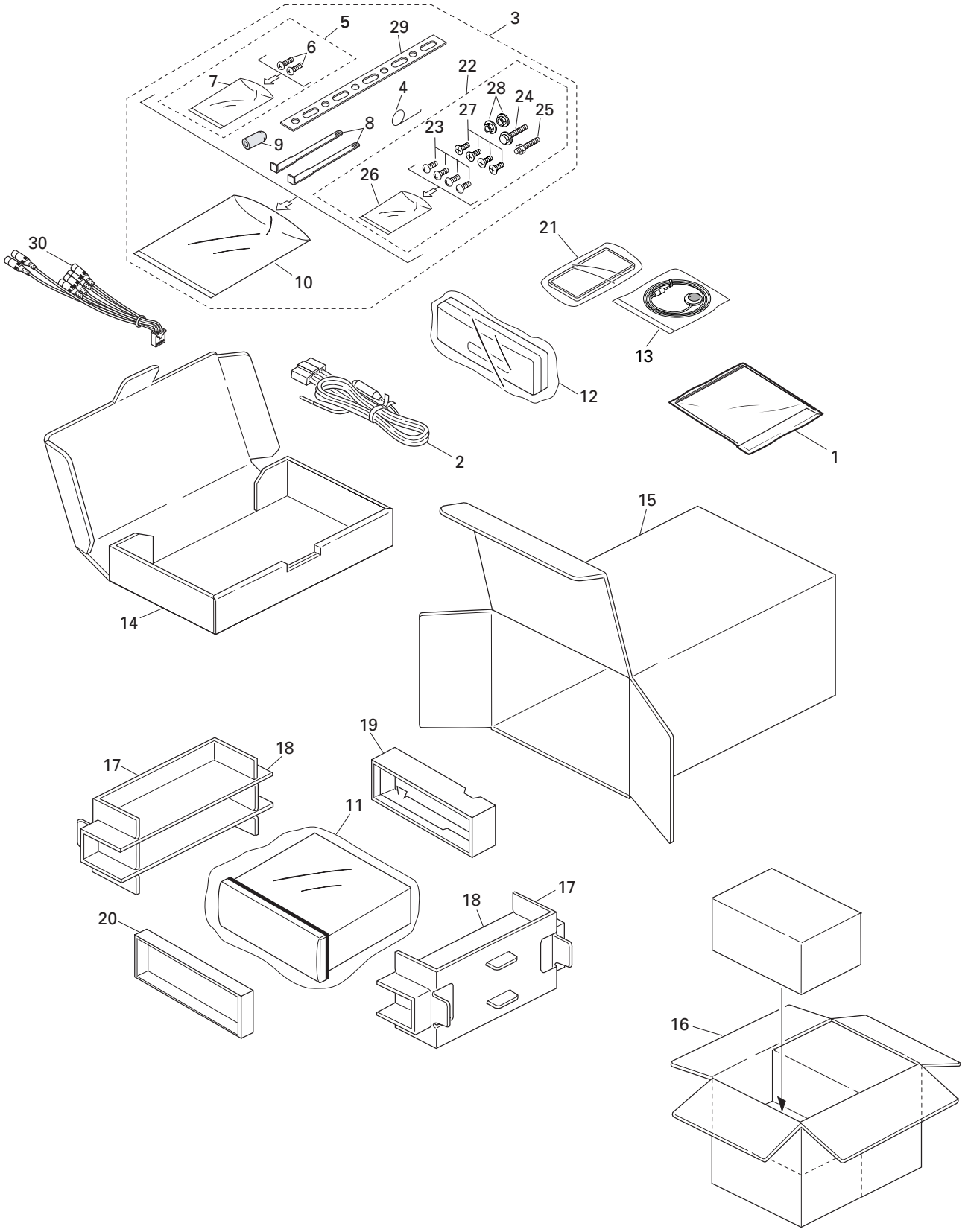
Note

Specifications and the design are subject to possible modifications without notice due to improvements. ■

2. EXPLODED VIEWS AND PARTS LIST

*NOTES : • Parts marked by " * " are generally unavailable because they are not in our Master Spare Parts List.*
• Screw adjacent to ▽ mark on the product are used for disassembly.
• For the applying amount of lobricants or glue, follow the instructions in this manual.
(In the case of no amount instructions,apply as you think it appropriate.)

2.1 PACKING(UC MODEL)



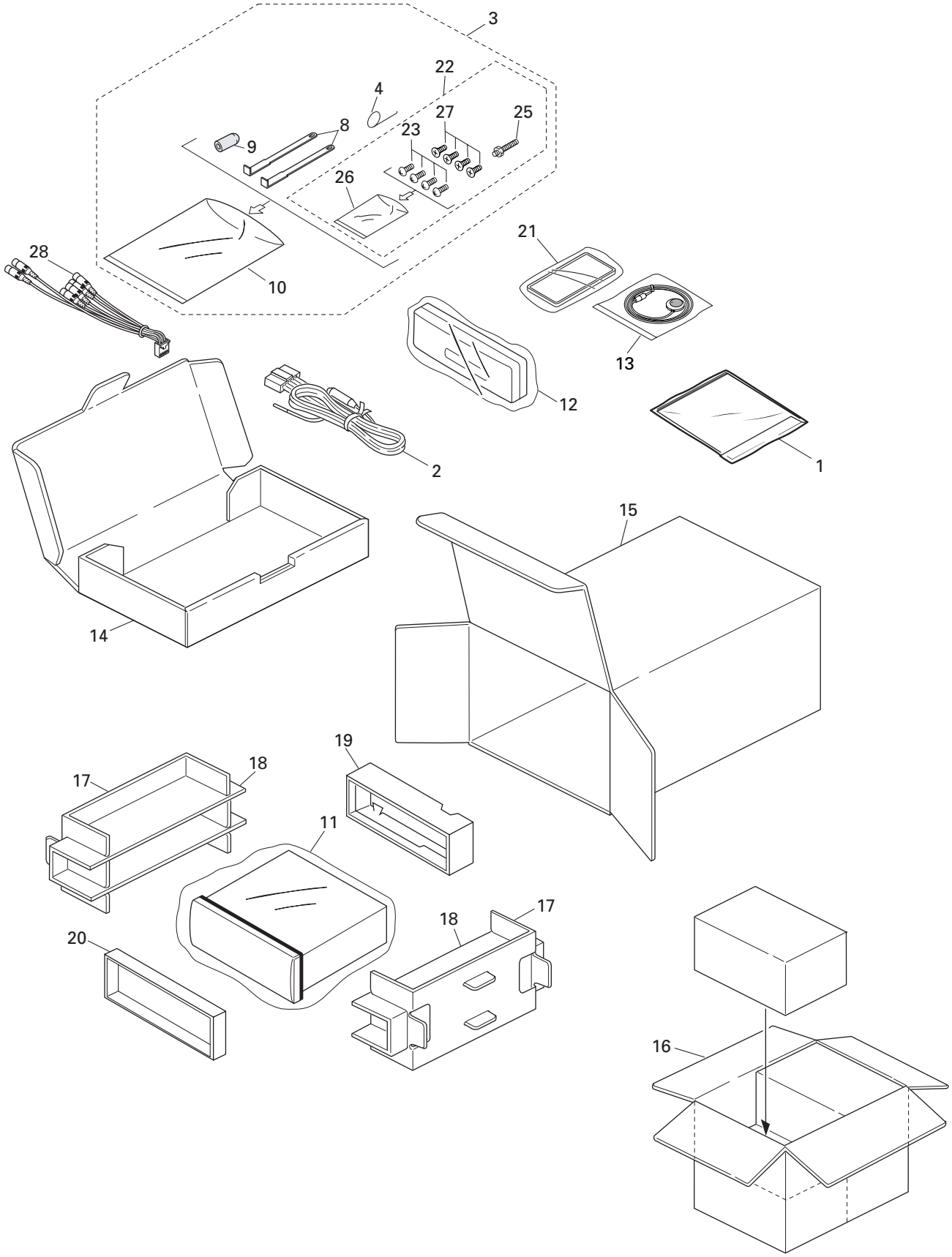
PACKING(UC MODEL) SECTION PARTS LIST

Mark	No.	Description	Part No.
	1-1	Owner's Manual(DEH-P960MP)	CRD3817
		Owner's Manual(DEH-P9600MP)	CRD3819
	1-2	Installation Manual(DEH-P960MP)	CRD3818
		Installation Manual(DEH-P9600MP)	CRD3820
*	1-3	Warranty Card(DEH-P960MP)	CRY1070
*	1-4	Card(DEH-P9600MP)	ARY1048
	1-5	Polyethylene Bag	CEG1116
*	1-6	Caution Card	CRP1309
	1-7	Caution Card	CRP1310
	2	Cord Assy	CDE7701
	3	Accessory Assy	CEA4113
	4	Spring	CBH1650
	5	Screw Assy	CEA4117
	6	Screw	BPZ20P060FZK
*	7	Polyethylene Bag	CEG-127
	8	Handle	CNC5395
	9	Bush	CNV3930
*	10	Polyethylene Bag	CEG-158
	11	Polyethylene Bag	CEG1185
	12	Case Assy	CXB8574
	13	MicrophoneAssy	CPM1054
	14	Sub Carton	CHA3258
	15	Carton(DEH-P960MP)	CHG5205
		Carton(DEH-P7600MP)	CHG5204
	16	Contain Box(DEH-P960MP)	CHL5205
		Contain Box(DEH-P9600MP)	CHL5204
	17	Protector	CHP2538
	18	Protector	CHP2539
	19	Protector	CHP2541
	20	Protector	CHP2546
	21	Remote Control Unit	CXC2665
	22	Screw Assy	CEA4115
	23	Screw	BMZ50P060FTC
	24	Screw	CBA1783
	25	Screw	CBA1650
*	26	Polyethylene Bag	CEG-127
	27	Screw	CMZ50P060FTC
	28	Nut	NF50FTC
	29	Strap	CNC5402
	30	Cord Assy(DEH-P960MP)	CDE7436
		Cord Assy(DEH-P9600MP)	CDE7437

Owner's Manual,Installation Manual

Part No.	Language
CRD3817, CRD3818, CRD3819, CRD3820	English,French

2.2 PACKING(ES MODEL)



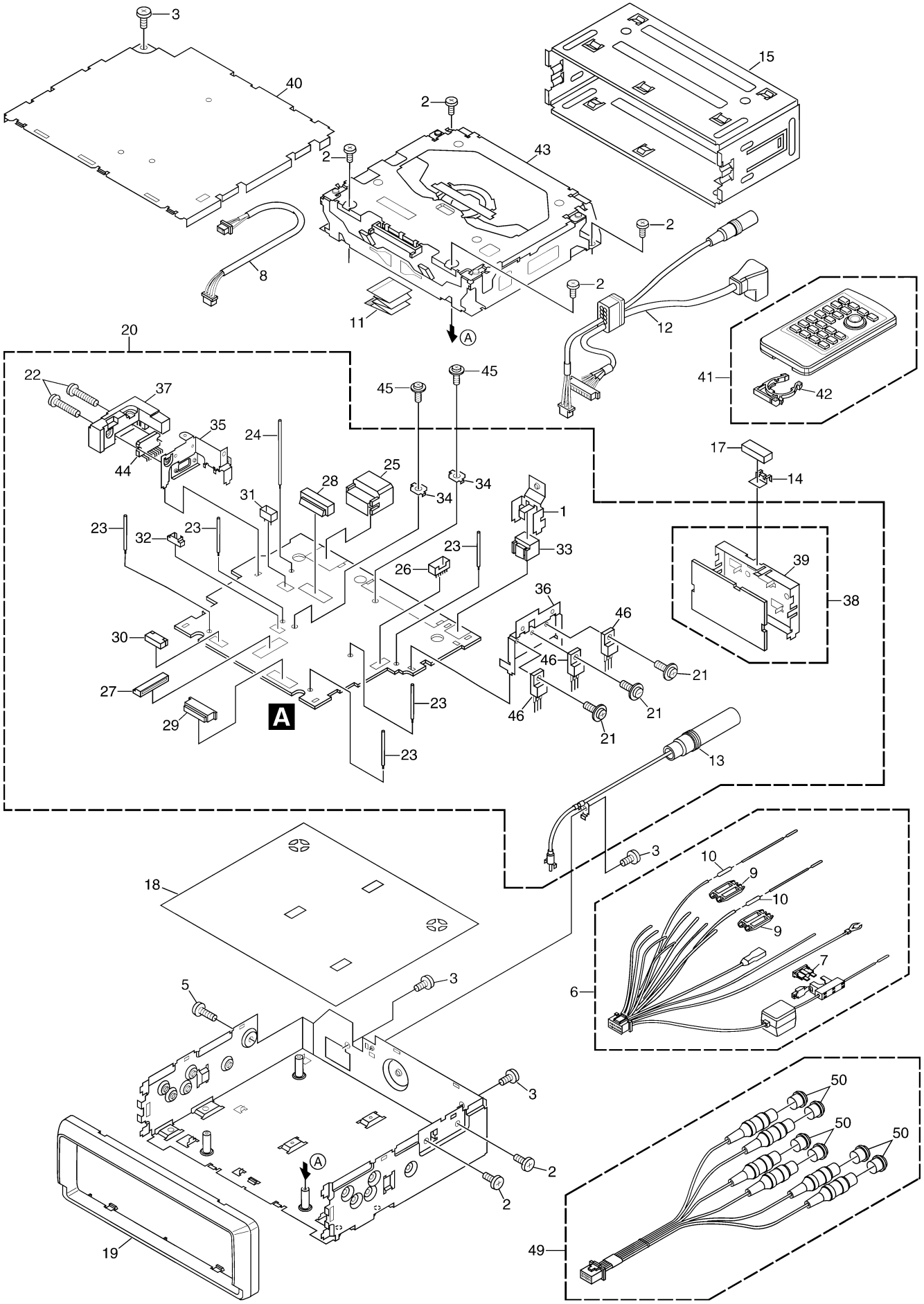
PACKING(ES MODEL) SECTION PARTS LIST

Mark	No.	Description	Part No.
	1-1	Owner's Manual	CRD3821
	1-2	Owner's Manual	CRD3822
	1-3	Installation Manual	CRD3823
*	1-4	Caution Card	CRP1310
	1-5	Polyethylene Bag	CEG1116
*	1-6	Caution Card	CRP1309
	2	Cord Assy	CDE7701
	3	Accessory Assy	CEA4112
	4	Spring	CBH1650
	5-7	•••••	
	8	Handle	CNC5395
	9	Bush	CNV3930
*	10	Polyethylene Bag	CEG-158
	11	Polyethylene Bag	CEG1088
	12	Case Assy	CXB8574
	13	MicrophoneAssy	CPM1054
	14	Sub Carton	CHA3258
	15	Carton	CHG5203
	16	Contain Box	CHL5203
	17	Protector	CHP2538
	18	Protector	CHP2539
	19	Protector	CHP2541
	20	Protector	CHP2546
	21	Remote Control Unit	CXC2665
	22	Screw Assy	CEA4114
	23	Screw	BMZ50P060FTC
	24	•••••	
	25	Screw	CBA1650
*	26	Polyethylene Bag	CEG-127
	27	Screw	CMZ50P060FTC
	28	Cord Assy	CDE7436

Owner's Manual,Installation Manual

Part No.	Language
CRD3821	English,Spanish,Portuguese(B)
CRD3822	Traditional Chinese,Arabic
CRD3823	English,Spanish,Portuguese(B),Traditional Chinese,Arabic

2.3 EXTERIOR(1)



(1) EXTERIOR(1) SECTION PARTS LIST

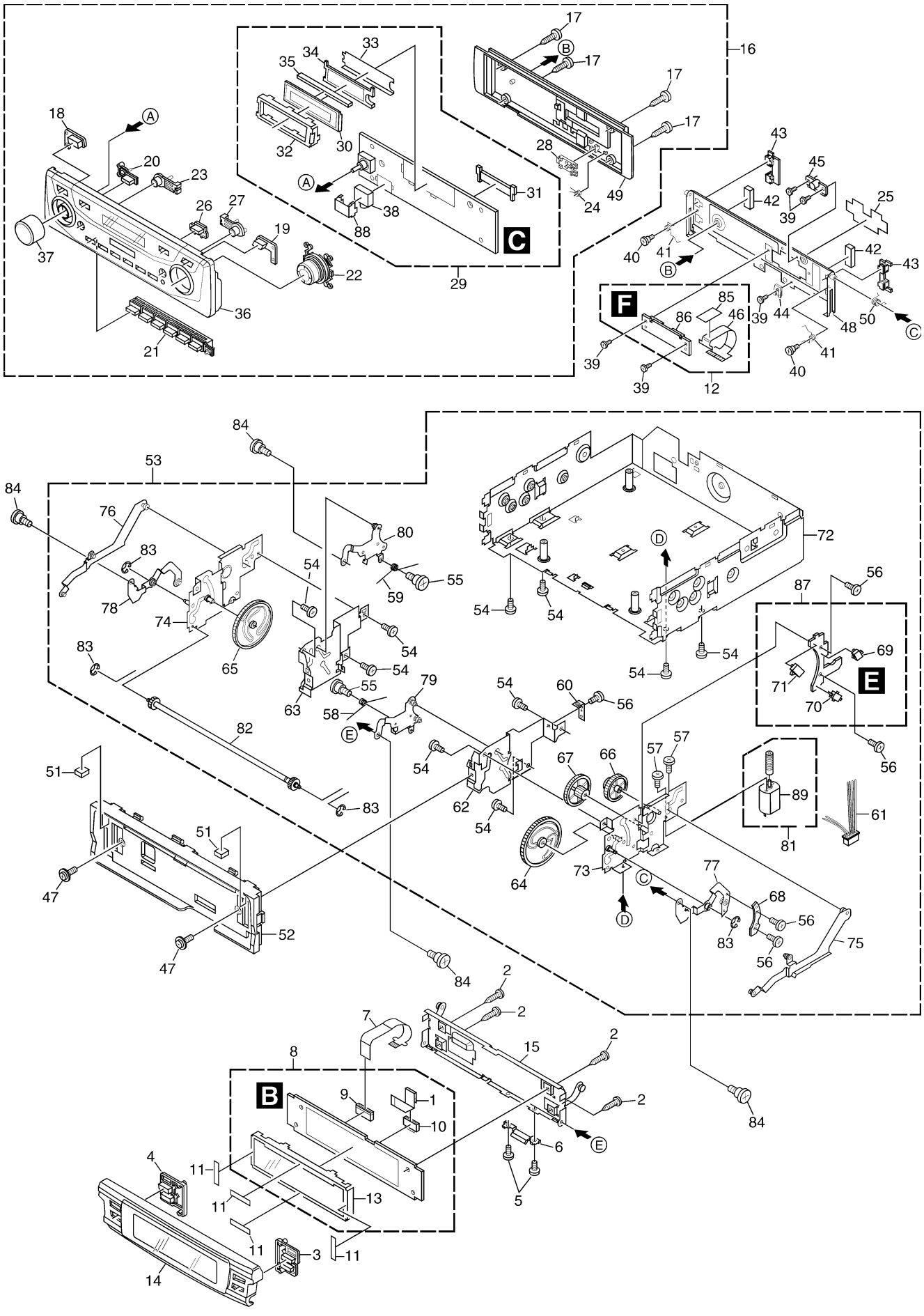
Mark	No.	Description	Part No.
	1	Holder	CND1979
	2	Screw	BSZ26P060FTC
	3	Screw	BSZ30P050FTC
	4	•••••	
	5	Screw	BSZ30P160FTC
	6	Cord Assy	CDE7701
	7	Fuse(10A)	CEK1136
	8	Cord Assy	CDE7439
	9	Cap	CNS1472
	10	Resistor	RS1/2PMF102J
	11	Flat Cable	CDE7440
	12	Cord Assy	See Contrast table(2)
	13	Antenna Cable(CN401)	CDH1336
	14	Holder	CNC6469
	15	Holder	CNC8659
	16	•••••	
	17	Cushion	CNM8890
	18	Insulator	CNM8590
	19	Panel	CNS6863
	20	Tuner Amp Unit	See Contrast table(2)
	21	Screw	ASZ26P080FTC
	22	Screw	BMZ26P140FTC
	23	Clamper	CEF1035
	24	Clamper	CEF1036
	25	Plug(CN981)	CKM1278
	26	Plug(CN811)	CKS-787
	27	Connector(CN701)	CKS3837
*	28	Plug(CN101)	CKS1058
	29	Connector(CN872)	CKS1082
*	30	Connector(CN871)	CKS2211
	31	Connector(CN771)	See Contrast table(2)
	32	Connector(CN703)	CKS3126
	33	Connector(CN351)	CKM1389
	34	Holder	CNC5399
	35	Holder	CNC9711
	36	Holder	CNC9713
	37	Heat Sink	CNR1615
	38	FM/AM Tuner Unit	CWE1646
	39	Holder	CND1054
	40	Case Unit	CXB8524
	41	Remote Control Assy	CXC2665
	42	Cover	CZN5357
	43	CD Mechanism Module(S10WMACODE2)	CXK5676
	44	IC(IC301)	PAL007A
	45	Screw	ISS26P055FTC
	46	Transistor(Q742,901,921)	2SD2396
	47	•••••	
	48	•••••	
	49	Cord Assy	See Contrast table(2)
	50	Cap	CNV6727

(2) CONTRAST TABLE

DEH-P960MP/XN/UC , DEH-P9600MP/XN/UC and DEH-P9650MP/XN/ES are constructed the same except for the following:

Mark	NO	Description	DEH-P960MP/XN/UC	DEH-P9600MP/XN/UC	DEH-P9650MP/XN/ES
	14	Cord Assy	CDE7434	CDE7434	CDE7435
	20	Tuner Amp Unit	CWM9185	CWM9186	CWM9187
	31	Plug(CN771)	CKS1036	CKS1036	Not used
	49	Cord Assy	CDE7436	CDE7437	CDE7436

2.4 EXTERIOR(2)



(1) EXTERIOR(2) SECTION PARTS LIST

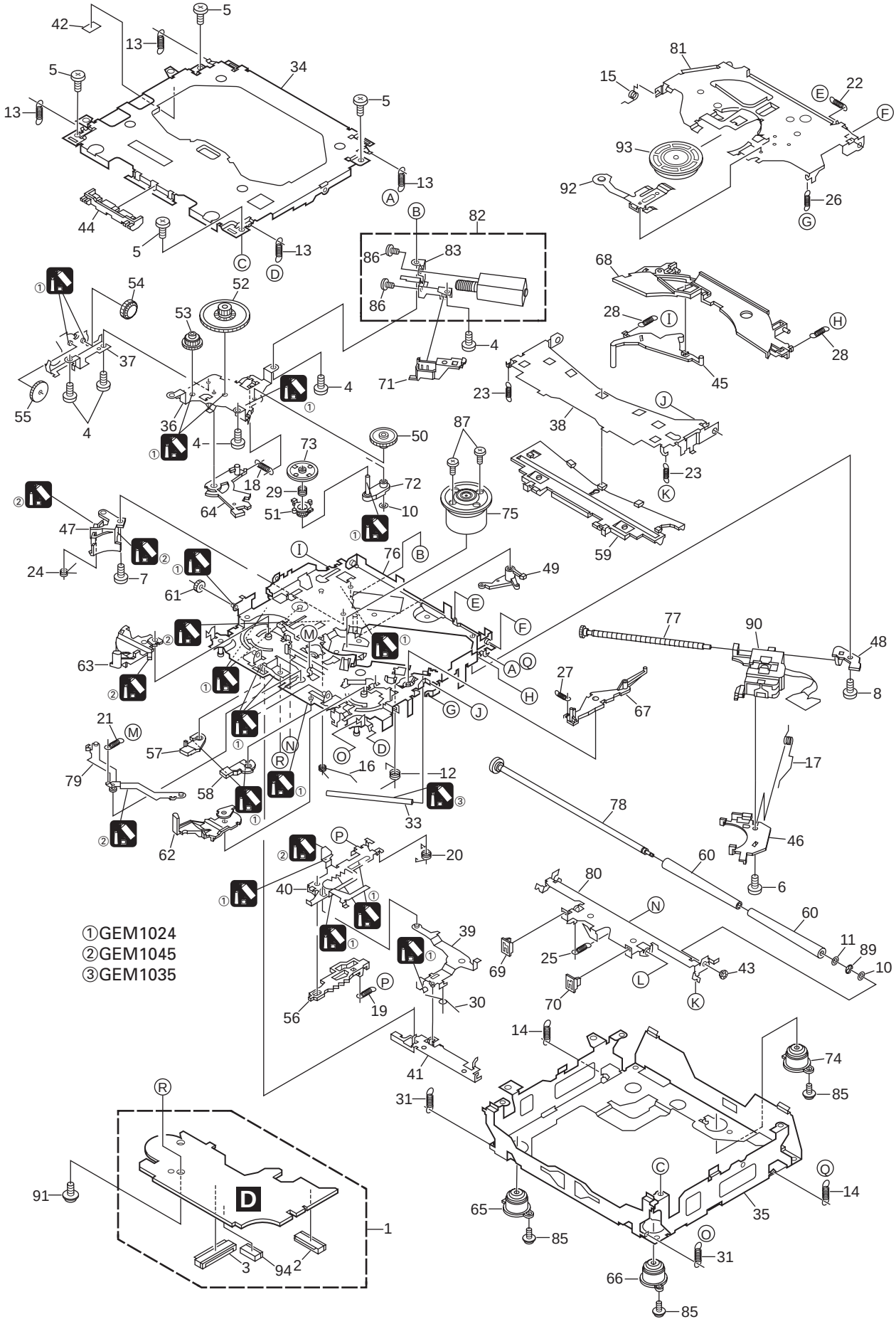
Mark	No.	Description	Part No.
	1	Cable	CDE7441
	2	Screw	BPZ20P080FZK
	3	Button(AUDIO,FUNC)	CAC8297
	4	Button(ENT,DISP)	CAC8298
	5	Screw(M2x2)	CBA1633
	6	Holder	CNC9800
	7	Flexible PCB	CNP6498
	8	Keyboard Unit(OEL)	CWM9191
	9	Connector(CN1801)	CKS4175
	10	Connector(CN1802)	CKS4792
	11	Spacer	CNM8982
	12	PCB Assy(Service)	CXX1799
	13	OEL Module	MXK8200
	14	Grille Unit	See Contrast table(2)
	15	Case Unit	CXC2406
	16	Detach Grille Assy	See Contrast table(2)
	17	Screw	BPZ20P080FZK
	18	Button(EJECT)	CAC8319
	19	Button(OPEN)	CAC8320
	20	Button(CLK)	CAC8323
	21	Button(1-6)	CAC8317
	22	Button Assy(CROSS)	CXC3687
	23	Button Unit(EQ)	CXC2450
	24	Spring	CBH2543
	25	Insulator	CNM8897
	26	Button(PAUSE)	CAC8324
	27	Button Unit(BAND)	CXC2451
	28	Arm	CNV6963
	29	Keyboard Unit(LCD)	CWM9194
	30	LCD(LCD1901)	CAW1704
	31	Connector(CN1901)	CKS4549
	32	Holder	CNC9648
	33	Sheet	CNM7512
	34	Lighting Conductor	CNV6914
	35	Connector	CNV6915
	36	Grille Unit	See Contrast table(2)
	37	Knob Unit	CXC3686
	38	Jack(CN1902)	CKN1016
	39	Screw(M2x2)	CBA1633
	40	Screw	CBA1561
	41	Spring	CBH2530
	42	Cushion	CNM8895
	43	Arm	CNV6962
	44	Guide	CNV6968
	45	Guide	CNV6967
	46	Flexible PCB	CNP7913
	47	Screw	ISS26P055FTC
	48	Case Unit	CXB7968
	49	Cover Unit	CXC2453
	50	Spring	CBH2545
	51	Cushion	CNM8894
	52	Panel Unit	CXB7953
	53	Drive Unit	See Contrast table(2)
	54	Screw	BMZ26P040FTC
	55	Screw(M2x1.4)	CBA1757
	56	Screw(M2x2)	CBA1633
	57	Screw	JFZ20P030FTC
	58	Spring	CBH2752
	59	Spring	CBH2753
	60	Spring	CBL1658
	61	Cord	CDE7587
	62	Holder	CND2244
	63	Holder	CND2245
	64	Gear	CNV8087
	65	Gear	CNV8088
	66	Gear	CNV8090
	67	Gear	CNV8091
	68	Lever	CNV8092
	69	Switch(S951)	CSN1051
	70	Spring Switch(S952)	CSN1052
	71	Switch(S953)	CSN1058
	72	Chassis Unit	See Contrast table(2)
	73	Holder Unit	CXC3023
	74	Holder Unit	CXC3024
	75	Arm Unit	CXC3025
	76	Arm Unit	CXC3026
	77	Arm Unit	CXC3027
	78	Arm Unit	CXC3028
	79	Arm Unit	CXC3029
	80	Arm Unit	CXC3030
	81	Motor Unit(M951)	CXC3190
	82	Gear Unit	CXC3094
	83	Washer	YE15FTC
	84	Screw(M2x1.5)	CBA1559
	85	Sheet	CNM7839
	86	PCB	CNX3607
	87	Switch Unit	CWS1370
	88	Holder	CND1971
	89	Motor	CXM1217

(2) CONTRAST TABLE

DEH-P960MP/XN/UC , DEH-P9600MP/XN/UC and DEH-P9650MP/XN/ES are constructed the same except for the following:

Mark	NO	Description	DEH-P960MP/XN/UC	DEH-P9600MP/XN/UC	DEH-P9650MP/XN/ES
	14	Grille Unit	CXC2404	CXC2403	CXC2402
	16	Detach Grille Assy	CXC3181	CXC3180	CXC3179
	36	Grille Unit	CXC2519	CXC2518	CXC2517
	53	Drive Unit	CXC2514	CXC2515	CXC2514
	72	Chassis Unit	CXC2454	CXC2455	CXC2454

2.5 CD MECHANISM MODULE

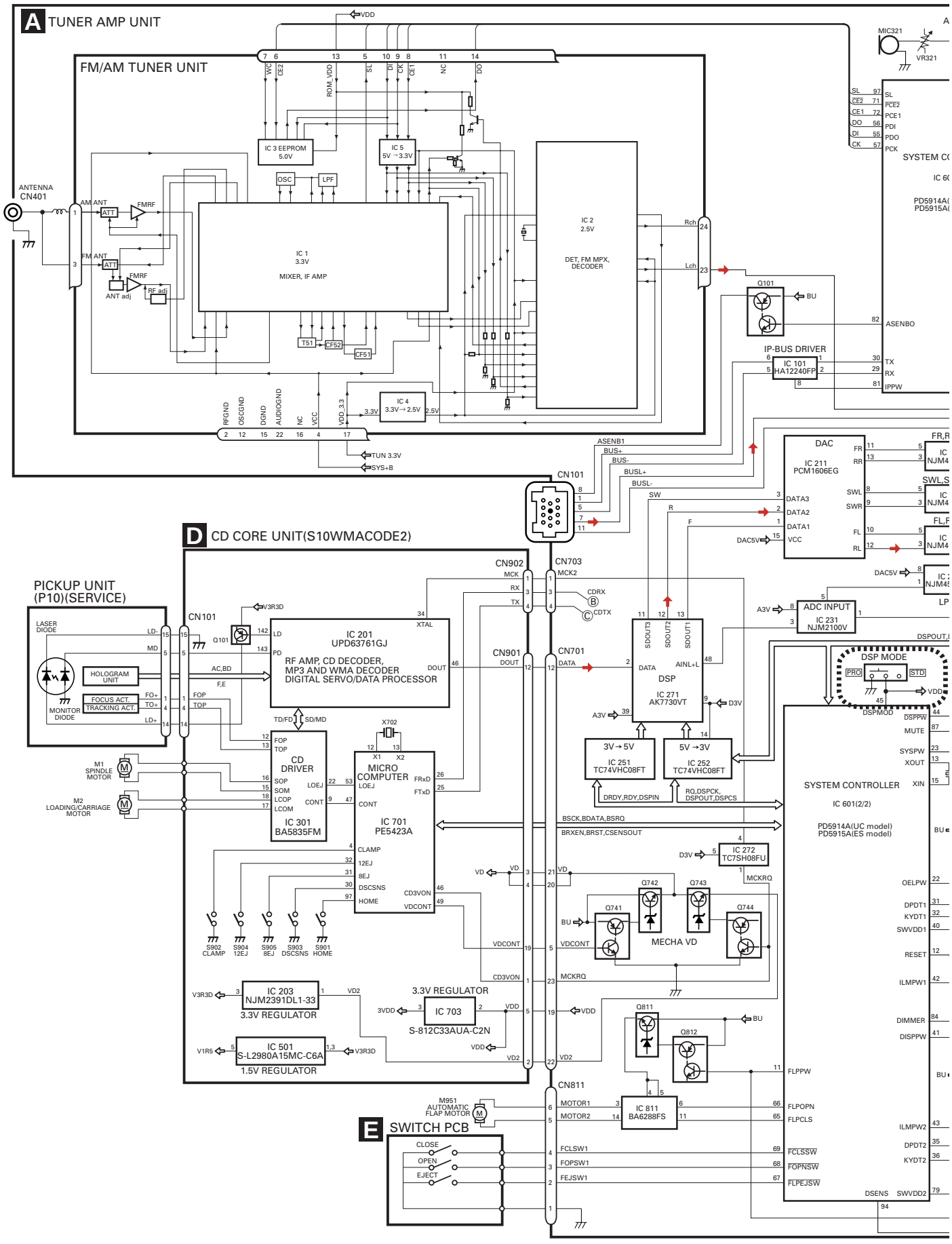


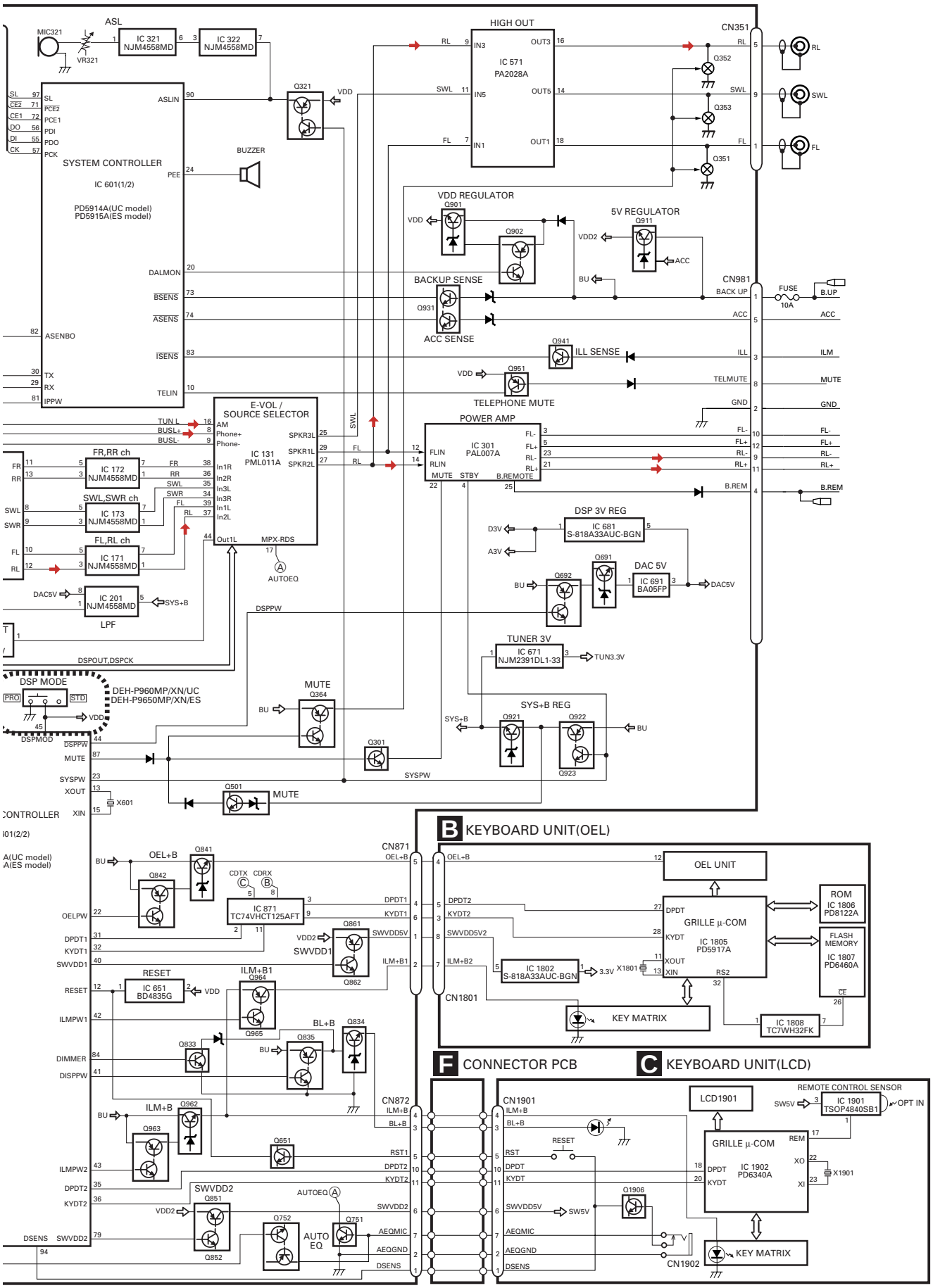
CD MECHANISM MODULE SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	CD Core Unit(S10WMA)	CWX2851
	2	Connector(CN101)	CKS4182
	3	Connector(CN901)	CKS4017
	4	Screw	BMZ20P035FTC
	5	Screw	BSZ20P040FTC
	6	Screw(M2x4)	CBA1362
	7	Screw(M2x3)	CBA1511
	8	Screw(M2x3)	CBA1527
	9	•••••	
	10	Washer	CBF1038
	11	Washer	CBF1060
	12	Spring	CBH2390
	13	Spring	CBH2606
	14	Spring	CBH2607
	15	Spring	CBH2608
	16	Spring	CBH2609
	17	Spring	CBH2610
	18	Spring	CBH2735
	19	Spring	CBH2612
	20	Spring	CBH2613
	21	Spring	CBH2614
	22	Spring	CBH2615
	23	Spring	CBH2616
	24	Spring	CBH2617
	25	Spring	CBH2620
	26	Spring	CBH2621
	27	Spring	CBH2641
	28	Spring	CBH2642
	29	Spring	CBH2643
	30	Spring	CBH2659
	31	Spring	CBH2688
	32	•••••	
	33	Shaft	CLA4441
	34	Frame	CNC9962
	35	Frame	CNC9963
	36	Bracket	CNC9966
	37	Bracket	CND1895
	38	Arm	CNC9968
	39	Arm	CND1909
	40	Lever	CND2032
	41	Lever	CNC9984
	42	Sheet	CNM8134
	43	Collar	CNV7798
	44	Guide	CNV7799
	45	Arm	CNV7800
	46	Rack	CNV7199
	47	Holder	CNV7201
	48	Holder	CNV7202
	49	Arm	CNV7203
	50	Gear	CNV7207
	51	Gear	CNV7208
	52	Gear	CNV7209
	53	Gear	CNV7210
	54	Gear	CNV7211
	55	Gear	CNV7212
	56	Rack	CNV7214
	57	Arm	CNV7215
	58	Arm	CNV7216
	59	Guide	CNV7217
	60	Roller	CNV7218
	61	Gear	CNV7219
	62	Arm	CNV7221
	63	Arm	CNV7220
	64	Arm	CNV7222
	65	Damper	CNV7313
	66	Damper	CNV7314
	67	Arm	CNV7341
	68	Arm	CNV7342
	69	Guide	CNV7360
	70	Guide	CNV7361
	71	Holder	CNV7437
	72	Arm	CNV7805
	73	Gear	CNV7595
	74	Damper	CNV7618
	75	Motor Unit(M1)	CXB6007
	76	Chassis Unit	CXC2318
	77	Screw Unit	CXB8729
	78	Gear Unit	CXC2397
	79	Arm Unit	CXC2316
	80	Arm	CND1896
	81	Arm	CND1894
	82	Motor Unit(M2)	CXB8933
	83	Bracket	CNC9985
	84	•••••	
	85	Screw(M2x5)	EBA1028
	86	Screw	JFZ20P020FTC
	87	Screw	JGZ17P022FTC
	88	•••••	
	89	Washer	YE20FTC
	90	Pickup Unit(P10)(Service)	CXX1641
	91	Screw	IMS26P030FTC
	92	Spring	CBL1635
	93	Clamper	CNV7197
	94	Connector(CN902)	CKS2193

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

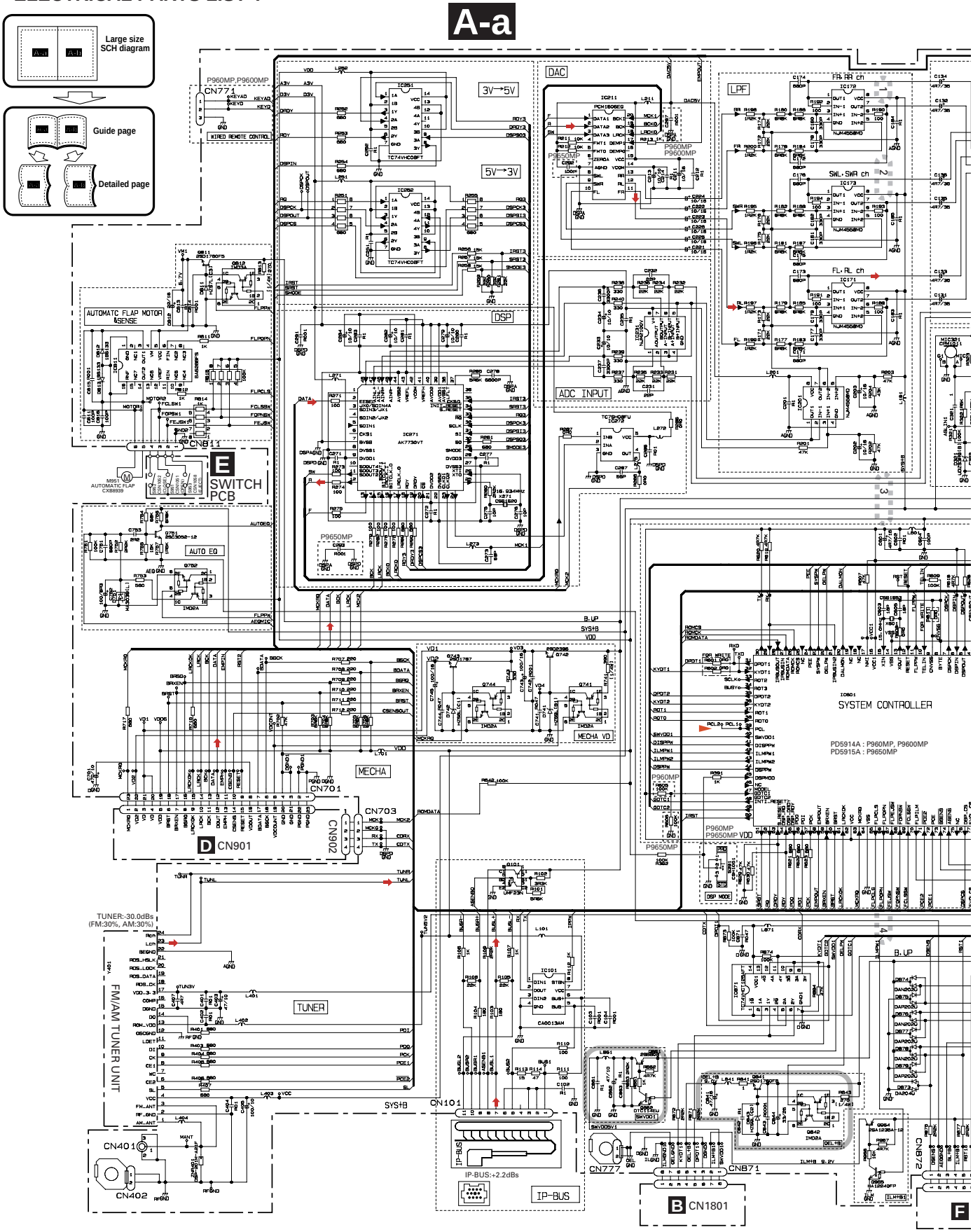
3.1 BLOCK DIAGRAM




ASL
MIC321
VR321
IC 321
NJM4558MD
IC 322
NJM4558MD
SYSTEM CONTROLLER
IC 601(1/2)
PD5914A(UC model)
PD5915A(ES model)
BUZZER
HIGH OUT
IC 571
PA2028A
CN351
RL
SWL
FL
Q351
Q352
Q353
VDD REGULATOR
Q901
Q902
5V REGULATOR
Q911
VDD2
ACC
BU
BACKUP SENSE
Q931
ACC SENSE
CN981
BACK UP
FUSE
10A
B.UP
ACC
ILL SENSE
Q941
ILL
ILM
TELMUTE
MUTE
Q951
TELEPHONE MUTE
GND
E-VOL /
SOURCE SELECTOR
IC 131
PML011A
POWER AMP
IC 301
PAL007A
FL-
FL+
RL-
RL+
B.REMOTE
B.REM
FR,RR ch
IC 172
NJM4558MD
SWL,SWR ch
IC 173
NJM4558MD
FL,RL ch
IC 171
NJM4558MD
DAC5V
IC 201
NJM4558MD
SYS+B
LPF
AUTOEQ
MPX-RDS
DSP 3V REG
IC 681
S-818A33AUC-BGN
D3V
A3V
DAC 5V
Q691
Q692
IC 691
BA05FP
DAC5V
TUNER 3V
IC 671
NJM2391DL1-33
TUN3.3V
DSPPW
DSPOUT,DSPCK
DSP MODE
PRO
STD
DEH-P960MP/XN/UC
DEH-P9650MP/XN/ES
DSPMOD
MUTE
Q364
Q301
Q501
SYSPW
SYS+B REG
Q921
Q922
Q923
XOUT
X601
XIN
B KEYBOARD UNIT(OEL)
CN871
OEL+B
Q841
Q842
CDTX
CDRX
IC 871
TC74VHCT125AFT
DPDT1
KYDT1
SWVDD5V
SWVDD1
Q861
Q862
ILM+B1
RESET
IC 651
BD4835G
Q964
Q965
BL+B
Q834
Q835
Q833
DIMMER
DISPPW
ILMPW1
CN872
ILM+B
Q962
Q963
BL+B
RST1
DPDT2
KYDT2
ILMPW2
SWVDD2
Q851
Q852
Q651
AUTOEQ
Q752
Q751
AUTO EQ
AEQMIC
AEQGND
DSENS
CN1801
OEL UNIT
GRILLE µ-COM
IC 1805
PD5917A
DPDT
KYDT
XOUT
XIN
RS2
ROM
IC 1806
PD8122A
FLASH MEMORY
IC 1807
PD6460A
IC 1802
S-818A33AUC-BGN
X1801
3.3V
KEY MATRIX
IC 1808
TC7WH32FK
F CONNECTOR PCB
C KEYBOARD UNIT(LCD)
CN1901
LCD1901
REMOTE CONTROL SENSOR
IC 1901
TSOP4840SB1
OPT IN
SW5V
GRILLE µ-COM
IC 1902
PD6340A
REM
XO
XI
X1901
Q1906
KEY MATRIX
CN1902

3.2 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to " EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".

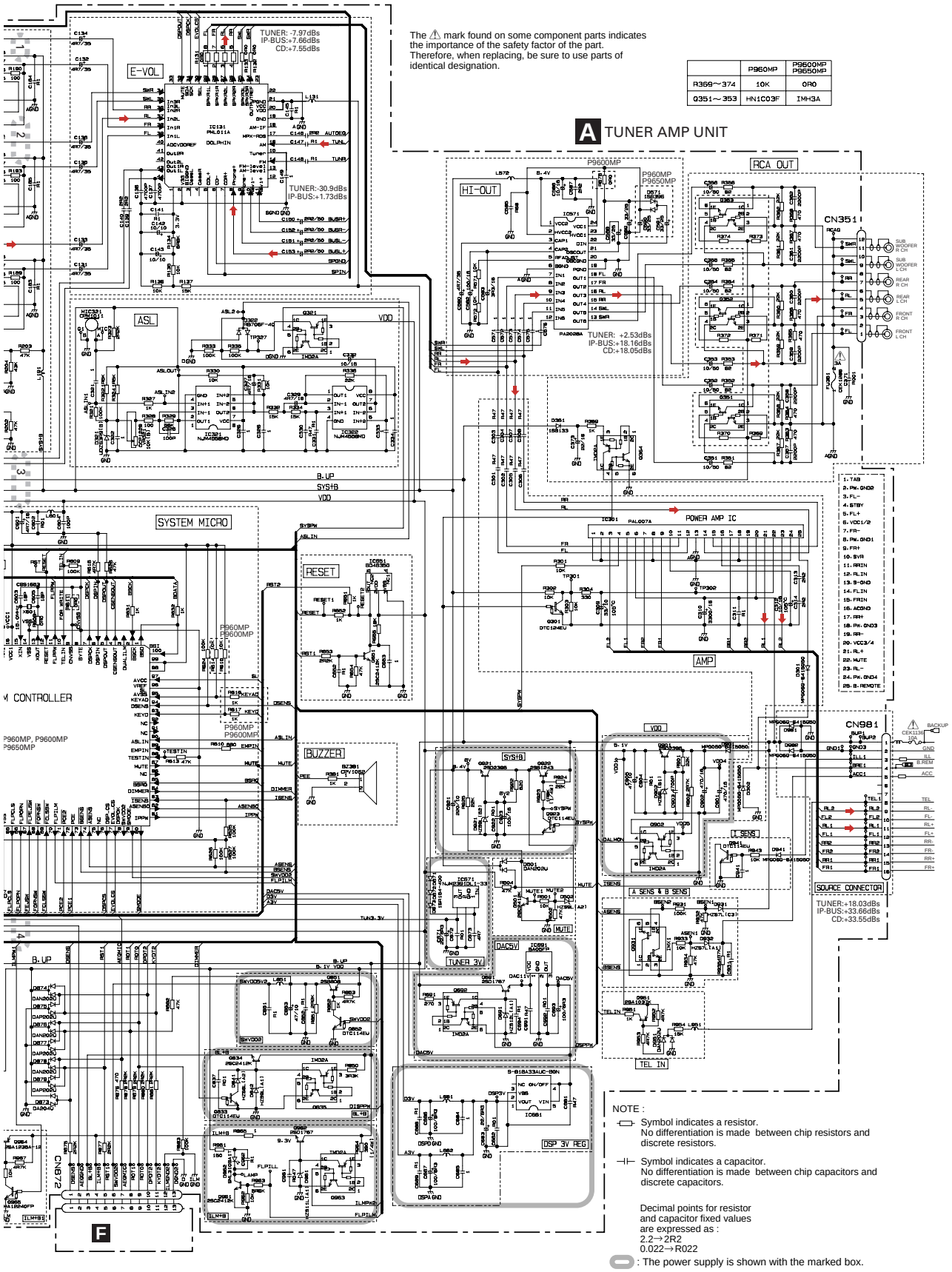


A-b

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

	P960MP	P9600MP P9650MP
R369～374	10K	0R0
Q351～353	HN1C03F	IMH3A

A TUNER AMP UNIT

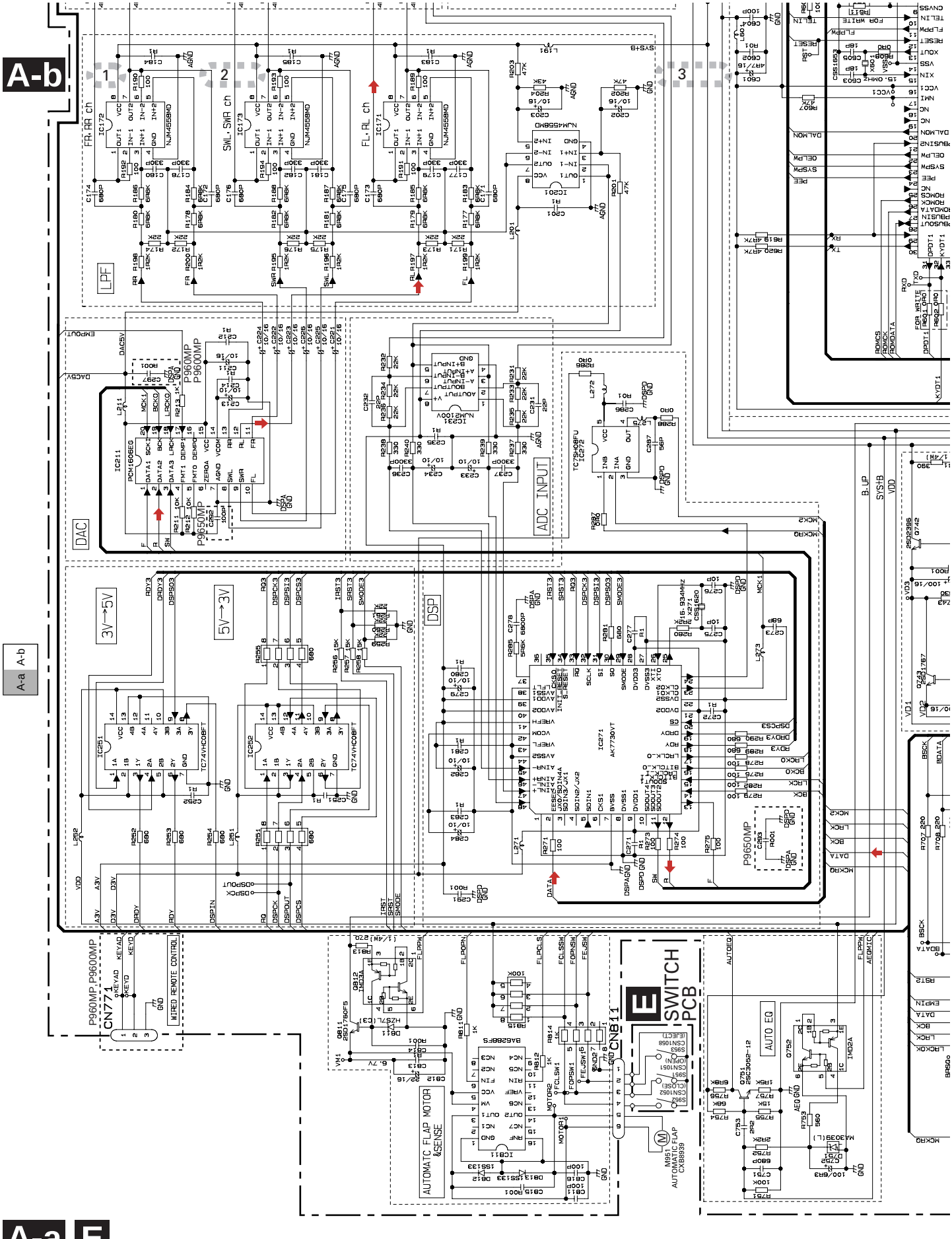


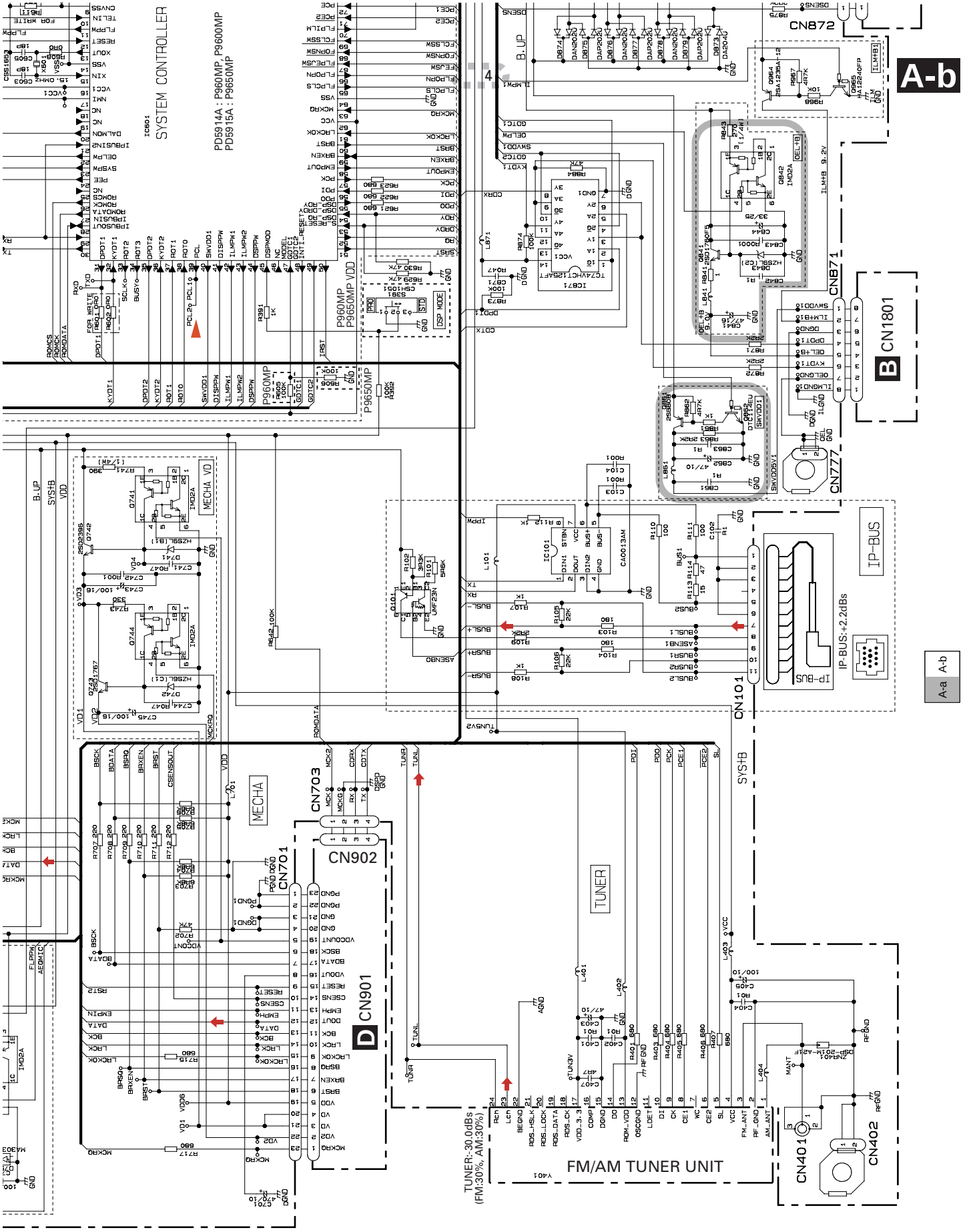
NOTE :

- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as :
2.2→2R2
0.022→R022

: The power supply is shown with the marked box.


A-b
A-a
E
FR, RR ch
SWL, SWR ch
FL, RL ch
LPF
DAC
ADC INPUT
DSP
3V→5V
5V→3V
P960MP, P9600MP
CN771
WIRED REMOTE CONTROL
AUTOMATIC FLAP MOTOR &SENSE
SWITCH PCB
CNB11
AUTO EQ
P9650MP

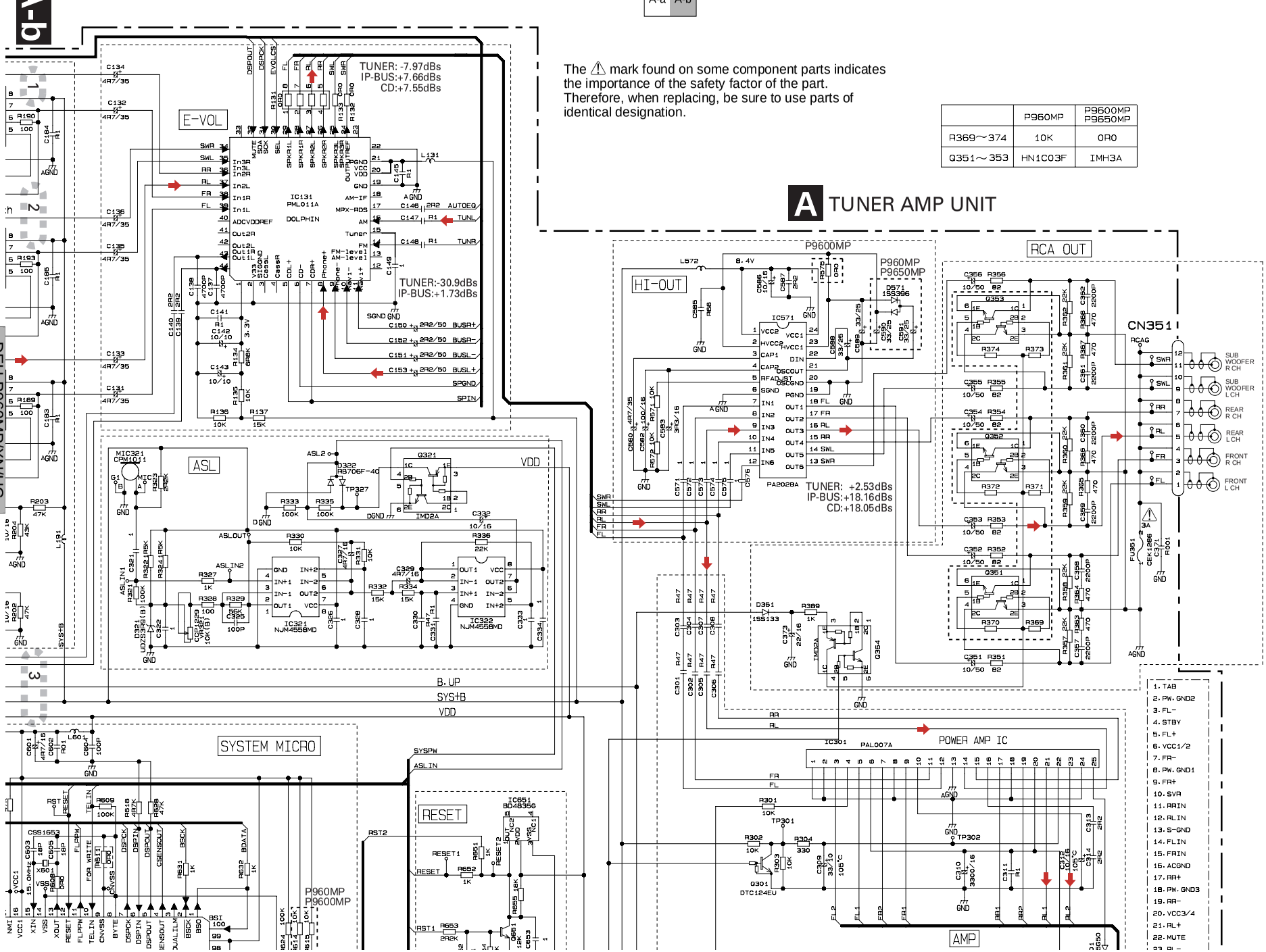

SYSTEM CONTROLLER
PD5914A : P960MP, P9600MP
PD5915A : P9650MP
P960MP VDD
P9650MP VDD
MECHA VD
MECHA
TUNER
FM/AM TUNER UNIT
IP-BUS
IP-BUS:+2.2dBs
TUNER:-30.0dBs
(FM:30%, AM:30%)
CN872
CN871
CN1801
CN777
CN101
CN703
CN902
CN701
CN901
CN401
CN402
A-b
A-a

A-a | A-b

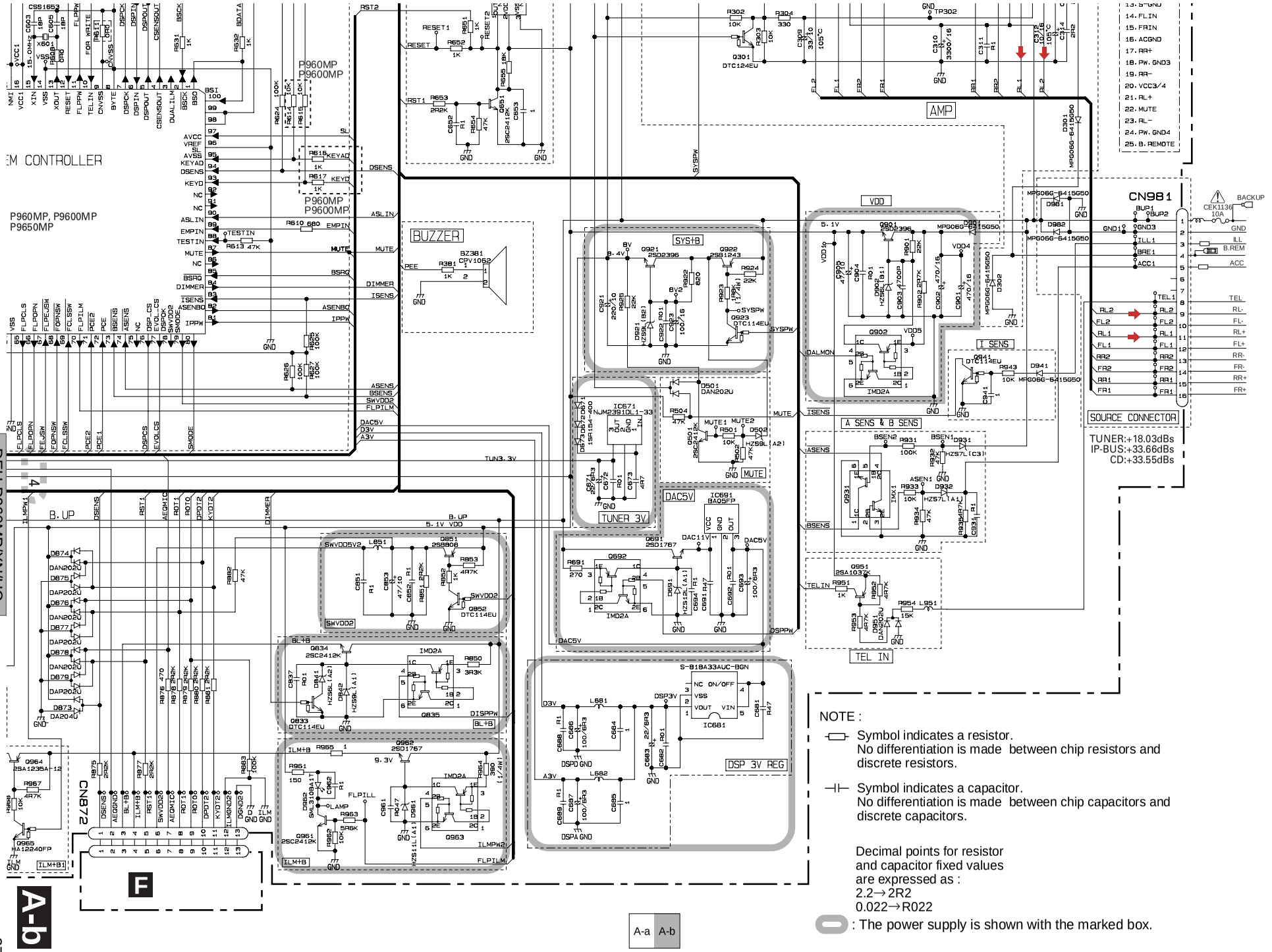
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

	P960MP	P9600MP P9650MP
R369～374	10K	0R0
Q351～353	HN1C03F	IMH3A

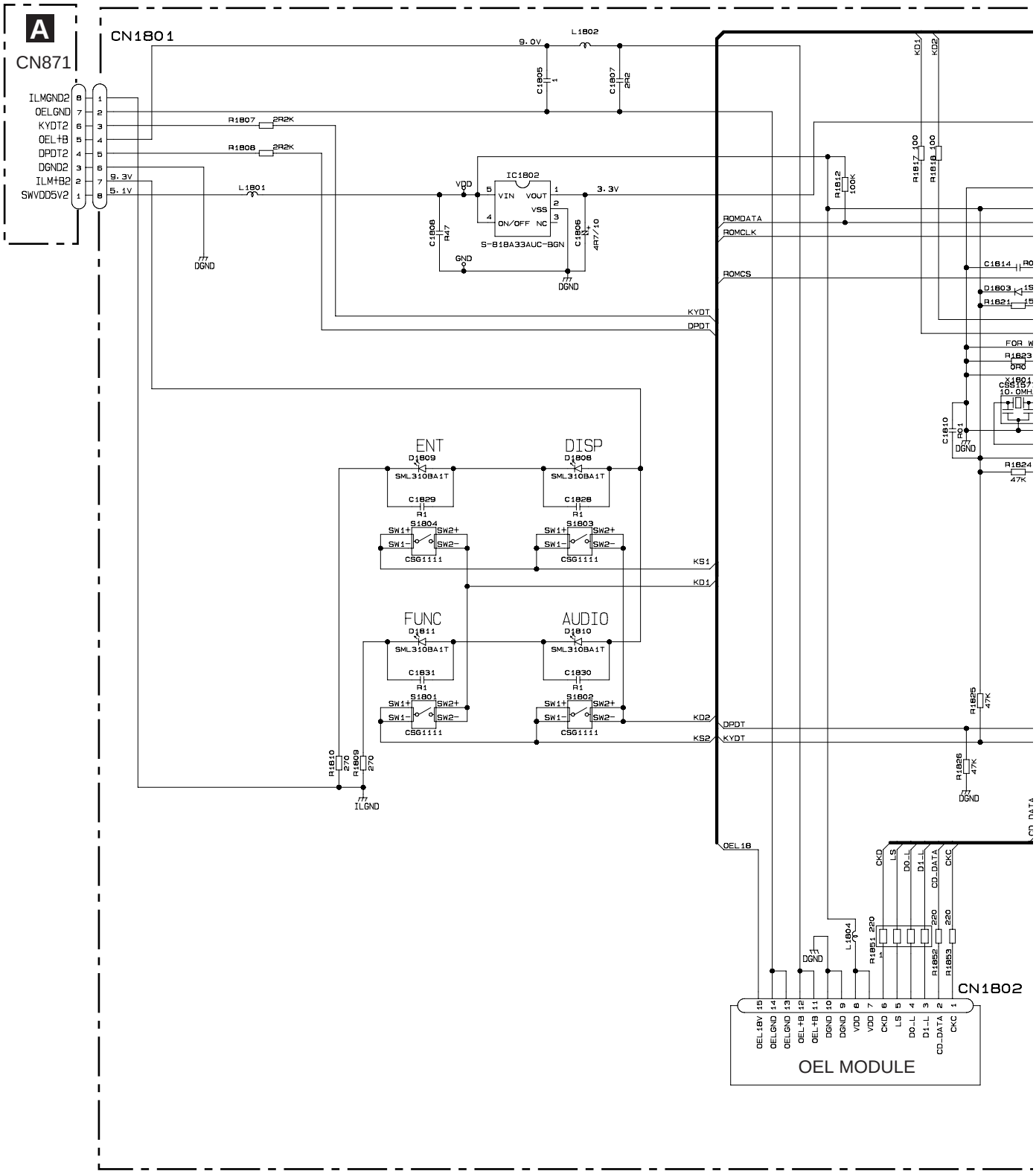
A TUNER AMP UNIT



DEH-P960MP/XN/UC

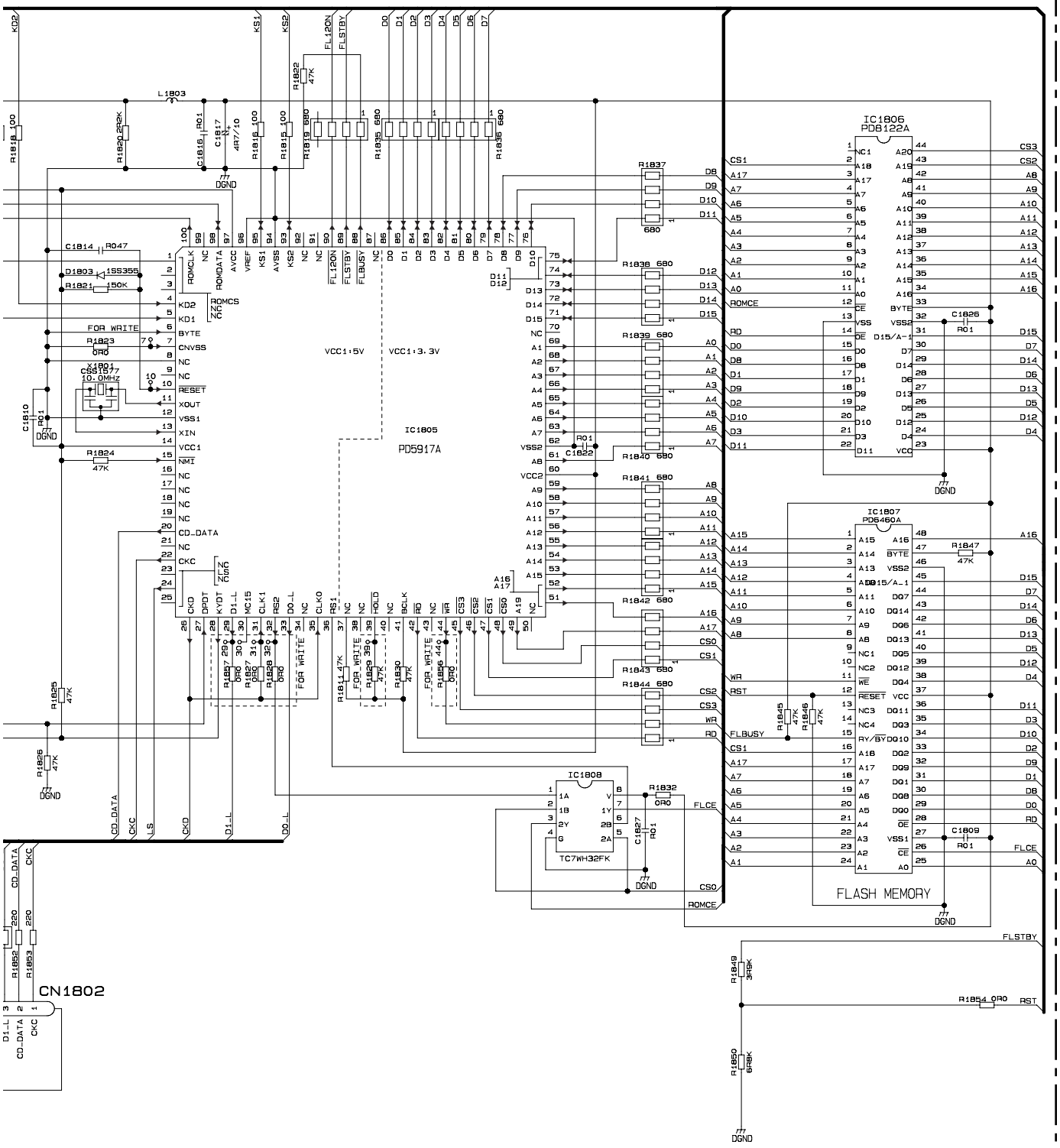

P960MP
P9600MP
P960MP, P9600MP
P9650MP
M CONTROLLER
BUZZER
AMP
VDD
SYS+B
TUNER 3V
DAC5V
DSP 3V REG
I SENS
A SENS & B SENS
TEL IN
MUTE
CN981
SOURCE CONNECTOR
CN872
TUNER:+18.03dBs
IP-BUS:+33.66dBs
CD:+33.55dBs
B. UP
5.1V VDD
BL+B
ILM+B
DISPPW
DSPPW
SWVDD2
DALMON
ASENS
BSENS
TELIN
NOTE :
Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.
Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.
Decimal points for resistor and capacitor fixed values are expressed as :
2.2→2R2
0.022→R022
: The power supply is shown with the marked box.

3.3 KEYBOARD UNIT(OEL)



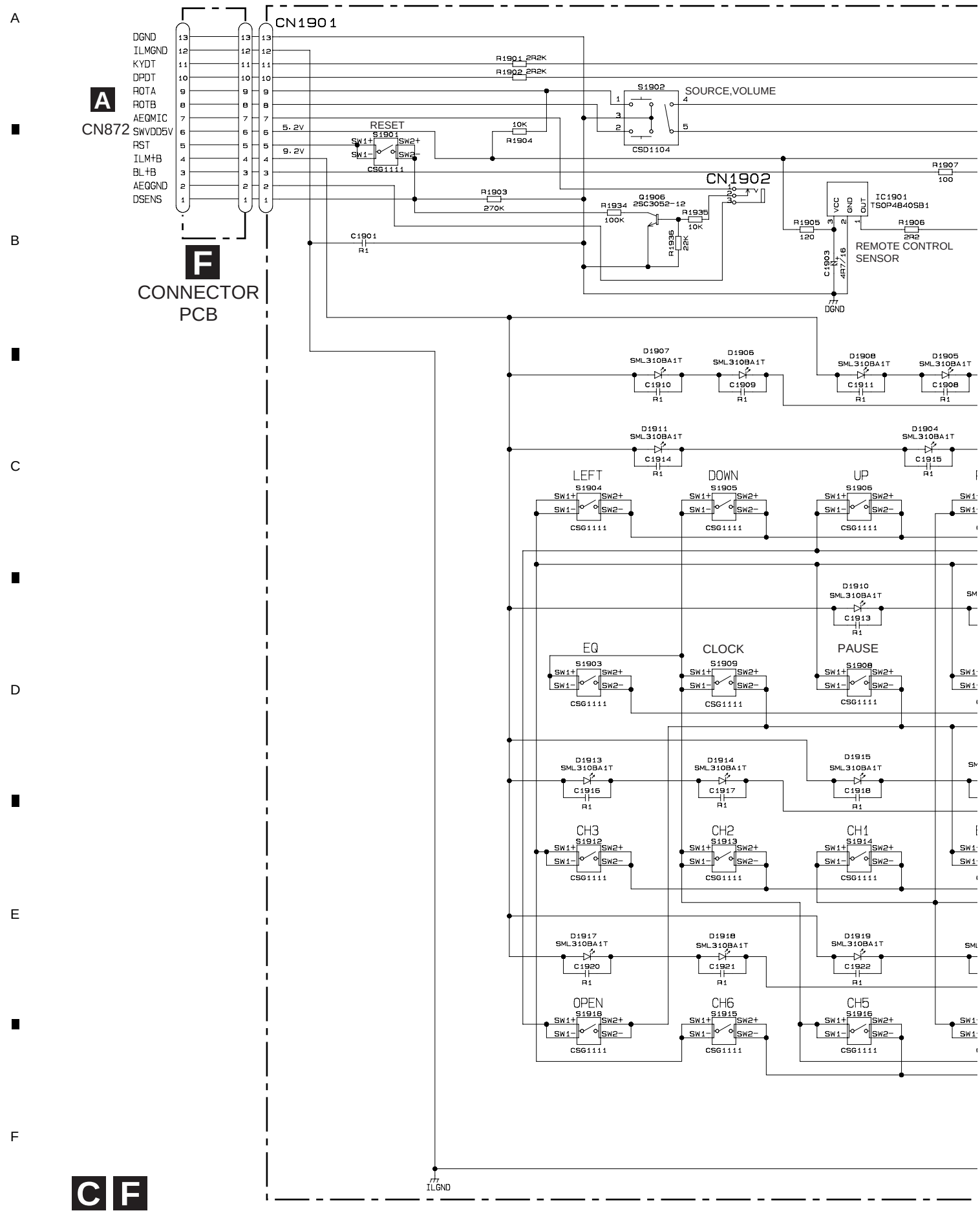
A

B KEYBOARD UNIT (OEL)



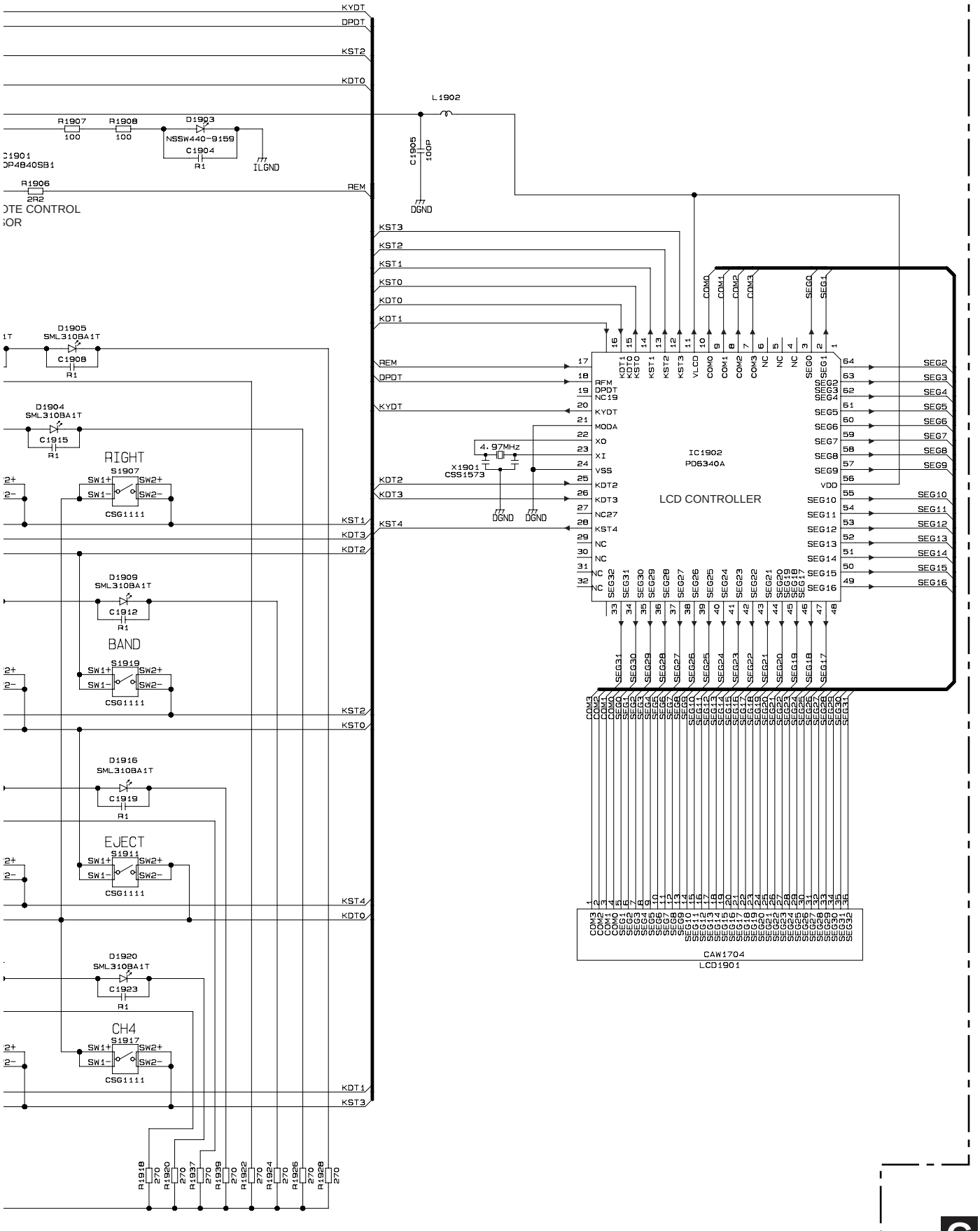
B

3.4 KEYBOARD UNIT(LCD)



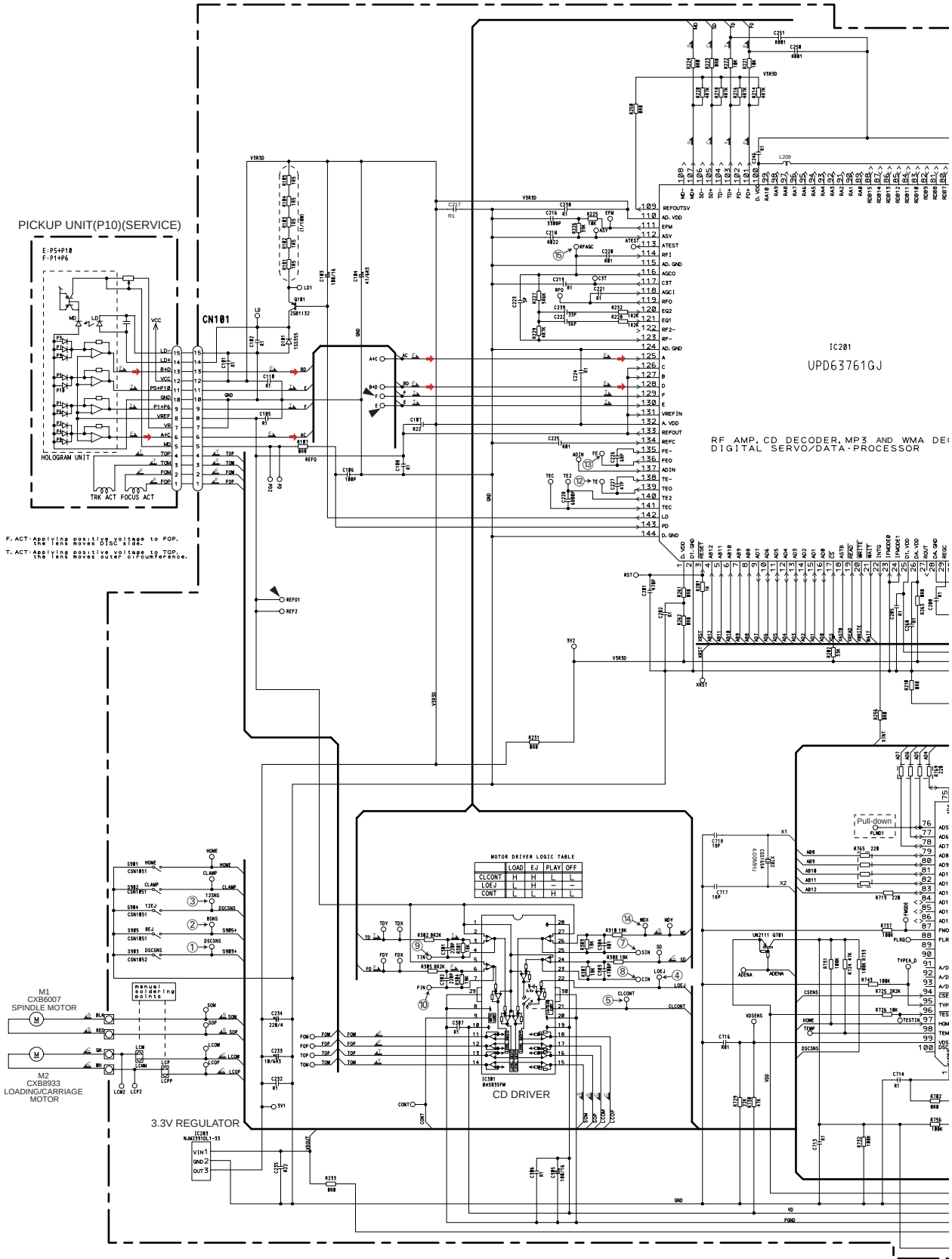
C F

C KEYBOARD UNIT (LCD)



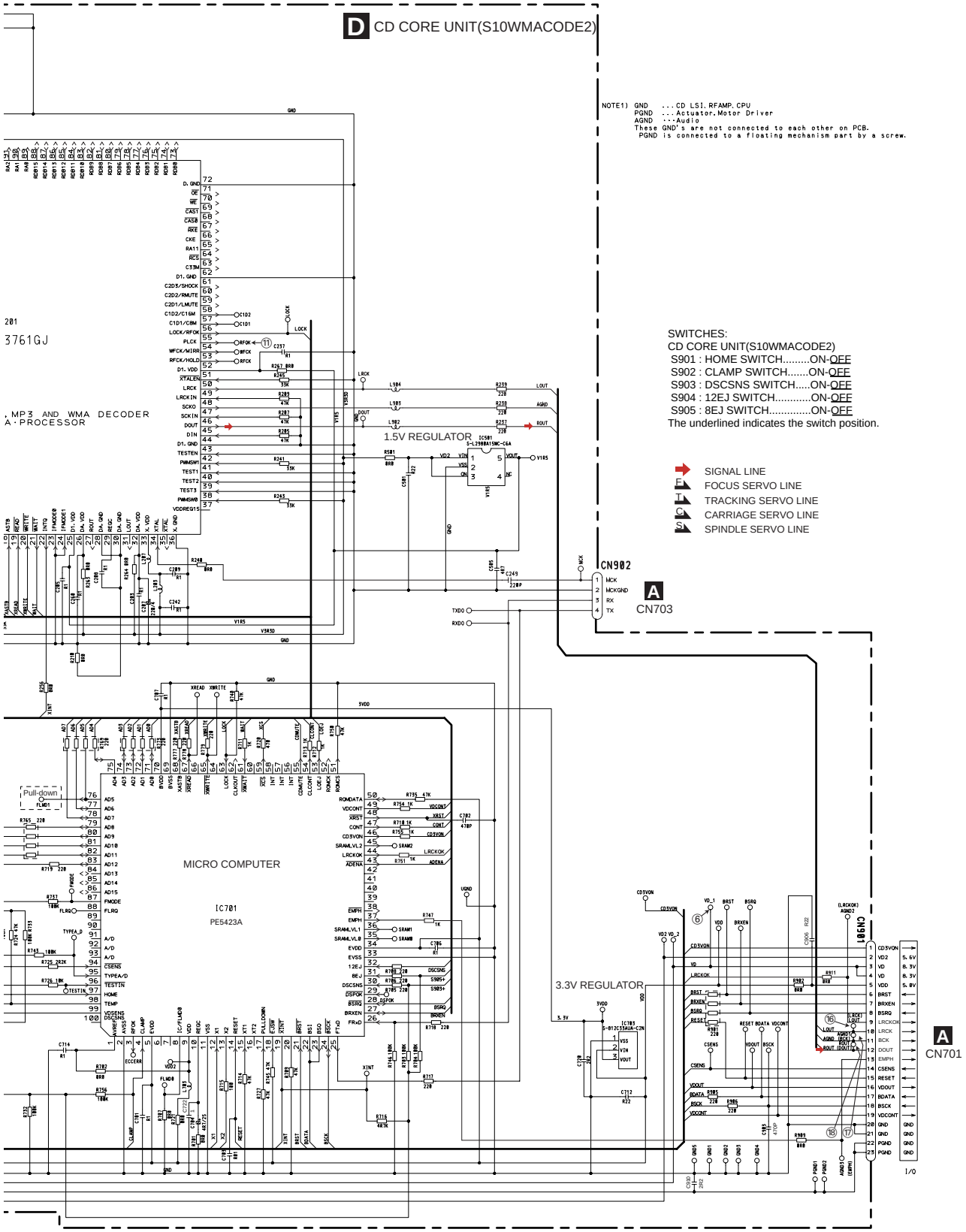
3.5 CD MECHANISM MODULE(GUIDE PAGE)

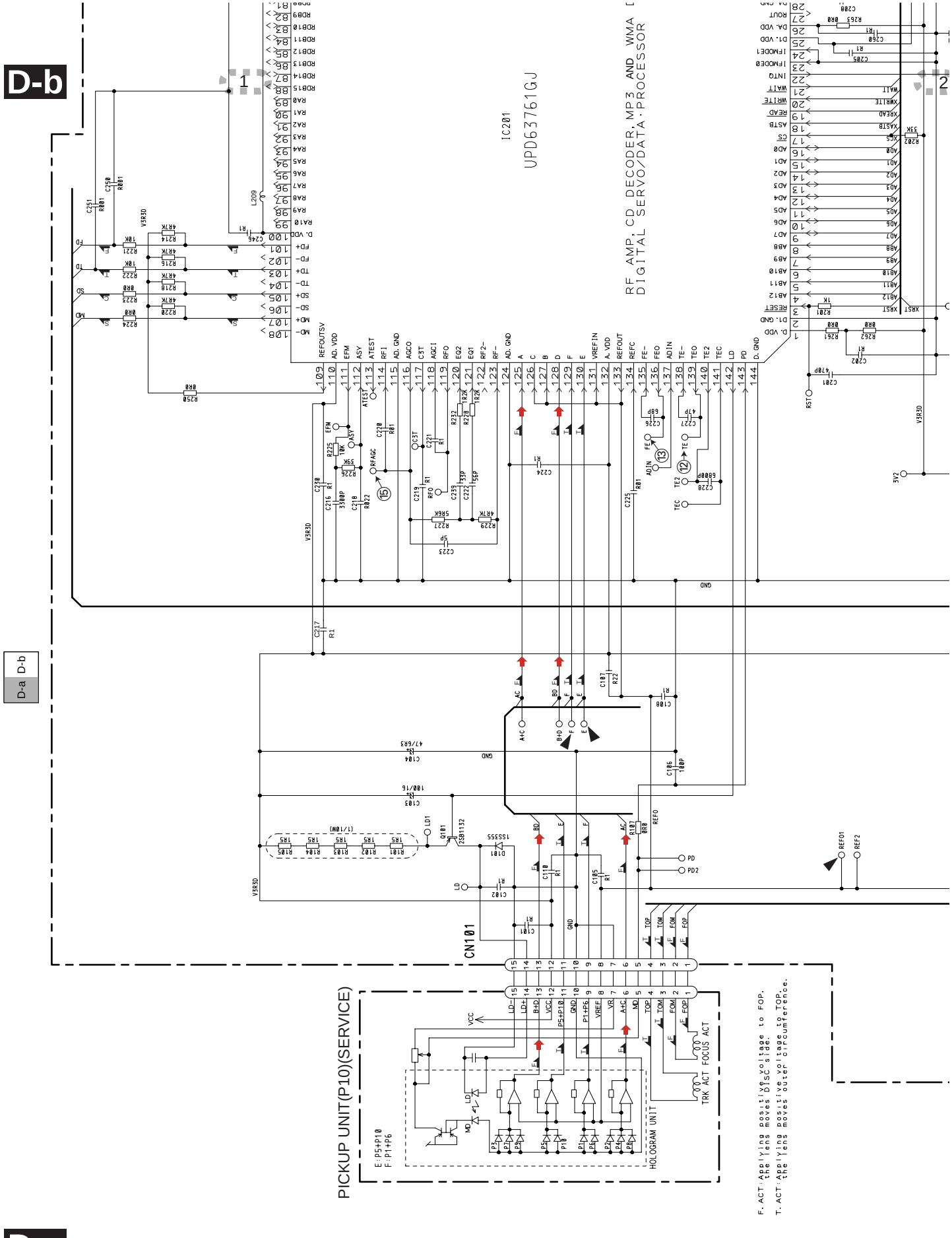
D-a

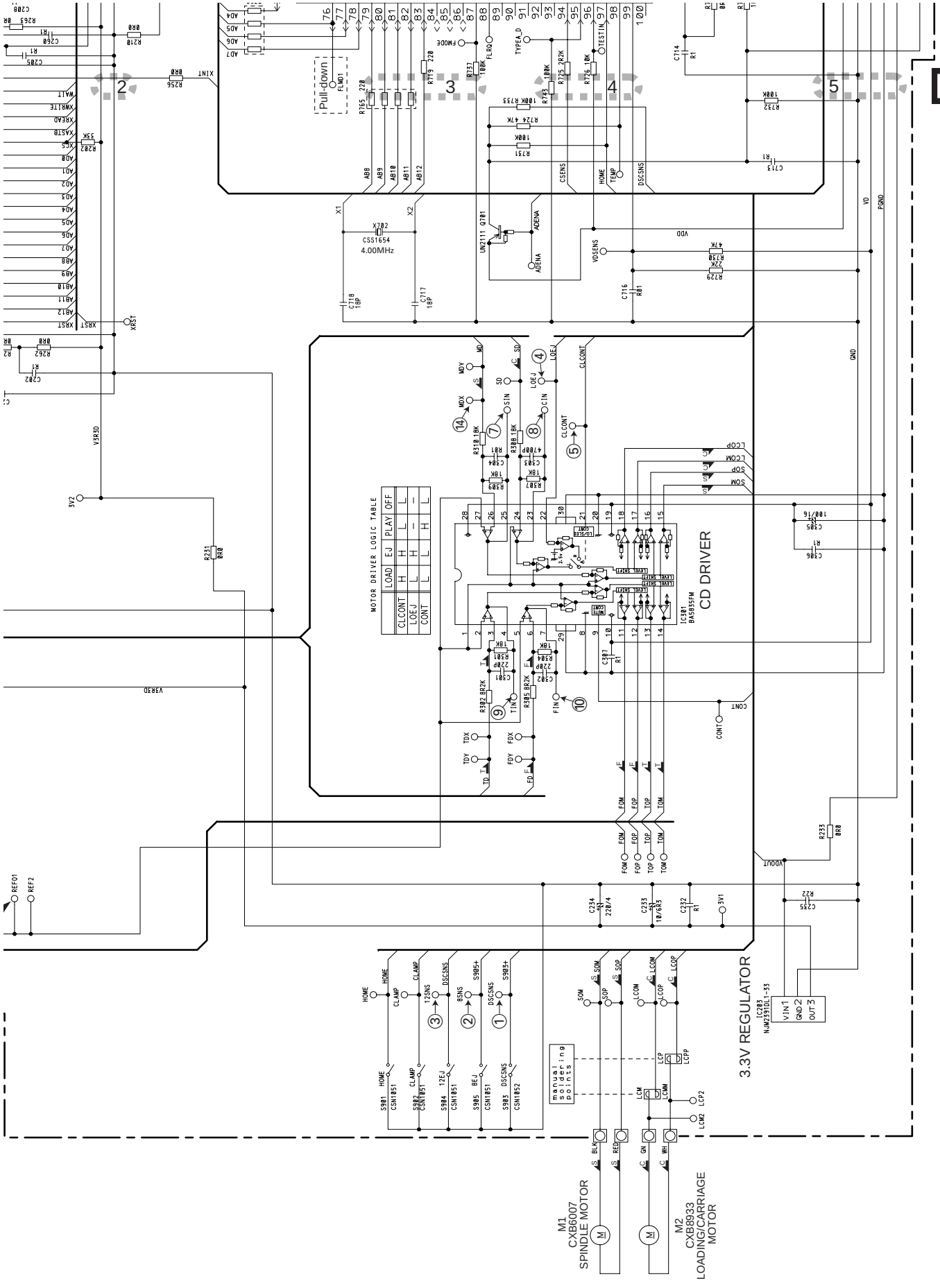


D-b

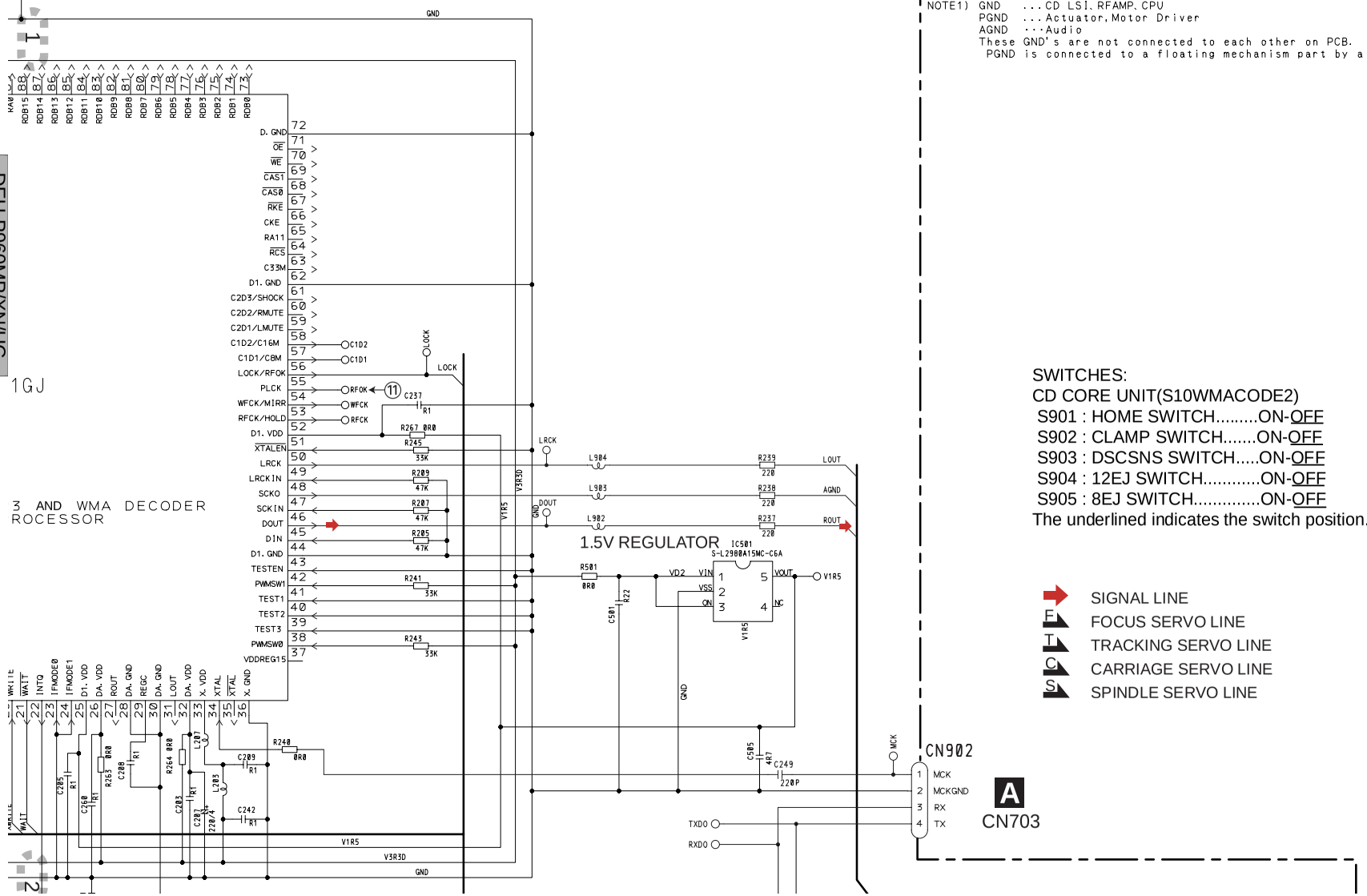
D CD CORE UNIT(S10WMACODE2)




D-b
D-a
IC201
UPD63761GJ
RF AMP, CD DECODER, MP3 AND WMA
DIGITAL SERVO/DATA PROCESSOR
CN101
PICKUP UNIT(P10)(SERVICE)
HOLOGRAM UNIT
E:P5+P10
F:P1+P6
F. ACT : Applying positive voltage to FOP.
the lens moves DISC side.
T. ACT : Applying positive voltage to TOP.
the lens moves outer circumference.


D-b
D-a
CD DRIVER
3.3V REGULATOR
M1
CXB6007
SPINDLE MOTOR
M2
CXB8933
LOADING/CARRIAGE
MOTOR
MOTOR DRIVER LOGIC TABLE
LOAD
EJ
PLAY
OFF
CLCONT
LOEJ
CONT
4.00MHz
Pull-down
manual soldering points

D CD CORE UNIT(S10WMACODE2)



NOTE1) GND ...CD LSI, RFAMP, CPU
PGND ...Actuator, Motor Driver
AGND ...Audio
These GND's are not connected to each other on PCB.
PGND is connected to a floating mechanism part by a screw.

SWITCHES:
CD CORE UNIT(S10WMACODE2)
S901 : HOME SWITCH.....ON-OFF
S902 : CLAMP SWITCH.....ON-OFF
S903 : DSCSNS SWITCH.....ON-OFF
S904 : 12EJ SWITCH.....ON-OFF
S905 : 8EJ SWITCH.....ON-OFF
The underlined indicates the switch position.

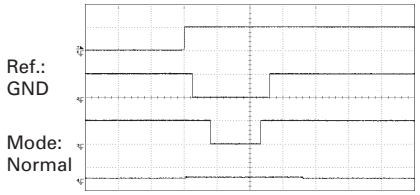
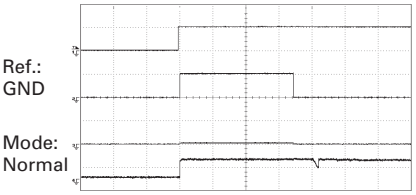
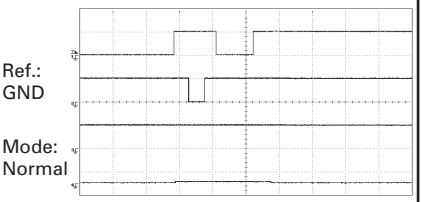
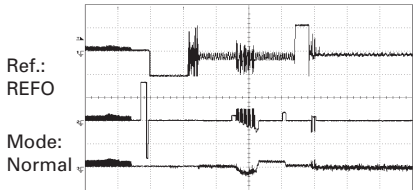
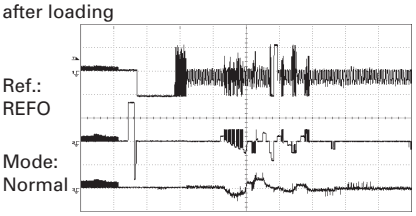
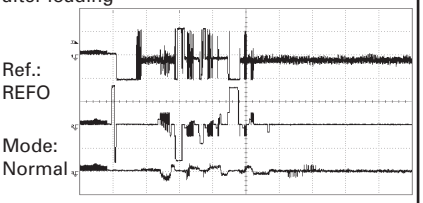
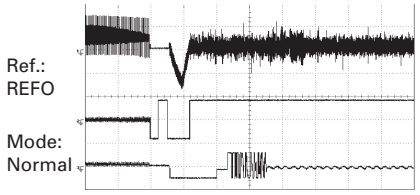
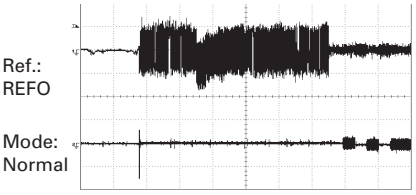
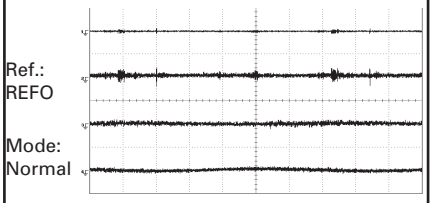
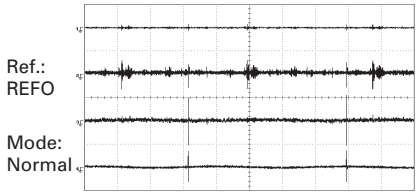
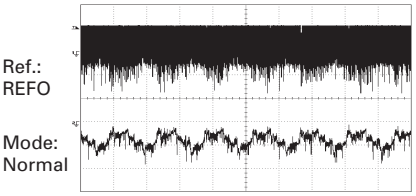
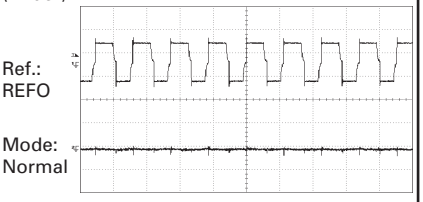
SIGNAL LINE
F FOCUS SERVO LINE
T TRACKING SERVO LINE
C CARRIAGE SERVO LINE
S SPINDLE SERVO LINE

DEH-P960MP/XN/UC
1GJ

CN701
CN901
CN703
3.3V REGULATOR
MICRO COMPUTER
IC701
PE6423A
D-a
D-b
D-b
DEH-P960MP/XN/UC
37

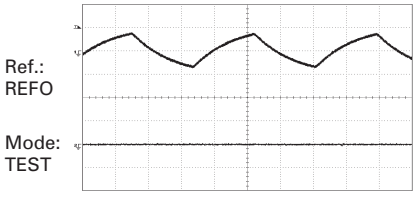
● Waveforms

Note : 1. The encircled numbers denote measuring points in the circuit diagram.
2. Reference voltage REFO1(1.65V)

① DSCSNS 5V/div 500ms/div ② 8SNS 5V/div ③ 12SNS 5V/div ④ LOEJ 5V/div 12 cm CD Loading operation  	① DSCSNS 5V/div 500ms/div ⑤ CLCONT 5V/div ④ LOEJ 5V/div ⑥ VD 10V/div 12 cm CD Loading operation  	① DSCSNS 5V/div 500ms/div ② 8SNS 5V/div ③ 12SNS 5V/div ④ LOEJ 5V/div 8 cm CD Loading operation 
⑦ SIN 1V/div 2s/div ⑧ CIN 500mV/div ⑨ TIN 500mV/div 12 cm CD-DA setup operation after loading  	⑦ SIN 1V/div 1s/div ⑧ CIN 500mV/div ⑨ TIN 500mV/div 12 cm CD-ROM(1 session) setup operation after loading  	⑦ SIN 1V/div 2s/div ⑧ CIN 500mV/div ⑨ TIN 500mV/div 12 cm CD-ROM(3 sessions) setup operation after loading 
⑩ FIN 200mV/div 500ms/div ⑪ RFOK 2V/div ⑦ SIN 2V/div 12 cm CD-DA Source On setup operation  	⑫ TE 500mV/div 200ms/div ⑬ FE 500mV/div Source On setup operation  	⑬ FE 500mV/div 20ms/div ⑩ FIN 500mV/div ⑫ TE 500mV/div ⑨ TIN 500mV/div CD-DA Play operation 
⑬ FE 500mV/div 20ms/div ⑩ FIN 500mV/div ⑫ TE 500mV/div ⑨ TIN 500mV/div CD-ROM play operation(Regular track Jump)  	⑭ MDX 1V/div 50ms/div ⑦ SIN 200mV/div Spindle waveform during play operation  	⑭ MDX 2V/div 5µs/div ⑦ SIN 1V/div Spindle waveform during play operation (Wider) 

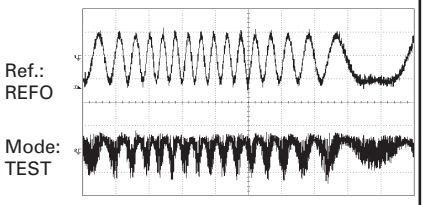
⑩ FIN 500mV/div 200ms/div
⑬ FE 500mV/div

Focus Search waveform



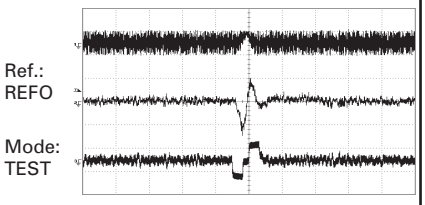
⑫ TE 500mV/div 2ms/div
⑮ RFAGC 500mV/div

Track Open waveform



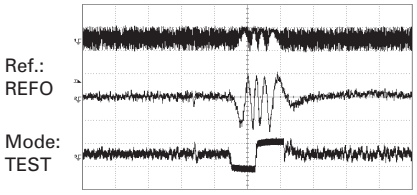
⑮ RFAGC 1V/div 500µs/div
⑫ TE 500mV/div
⑨ TIN 500mV/div

1 Track Jump waveform



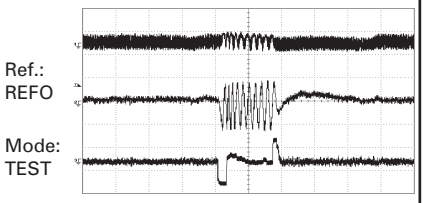
⑮ RFAGC 1V/div 500µs/div
⑫ TE 500mV/div
⑨ TIN 500mV/div

4 Tracks Jump waveform



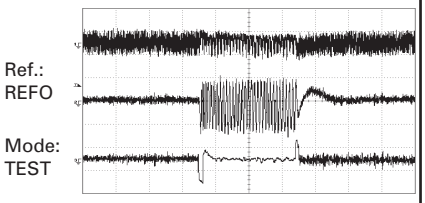
⑮ RFAGC 1V/div 1ms/div
⑫ TE 500mV/div
⑨ TIN 500mV/div

10 Tracks Jump waveform



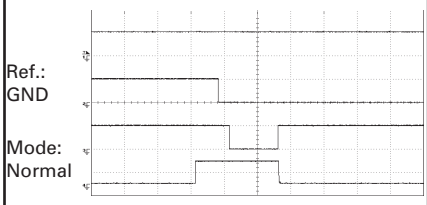
⑮ RFAGC 1V/div 2ms/div
⑫ TE 500mV/div
⑨ TIN 500mV/div

32 Tracks Jump waveform



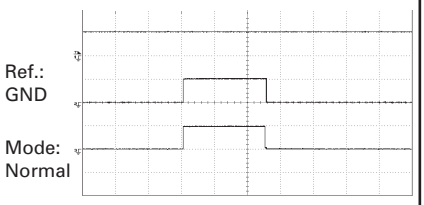
① DSCSNS 5V/div 500ms/div
② 8SNS 5V/div
③ 12SNS 5V/div
④ LOEJ 5V/div

12 cm CD Eject operation



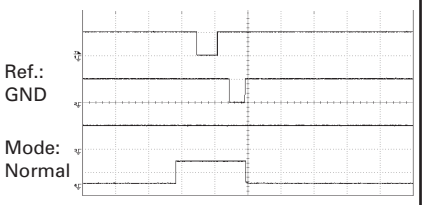
① DSCSNS 5V/div 500ms/div
⑤ CLCONT 5V/div
④ LOEJ 5V/div

12 cm CD Eject operation



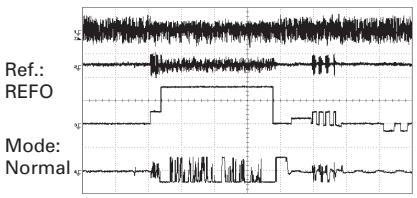
① DSCSNS 5V/div 500ms/div
② 8SNS 5V/div
③ 12SNS 5V/div
④ LOEJ 5V/div

8 cm CD Eject operation



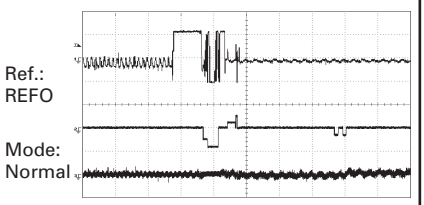
⑮ RFAGC 1V/div 200ms/div
⑫ TE 1V/div
⑧ CIN 500mV/div
⑦ SIN 2V/div

Search operation(Outter to Inner)



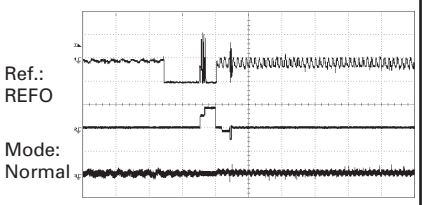
⑦ SIN 1V/div 500ms/div
⑧ CIN 500mV/div
⑨ TIN 500mV/div

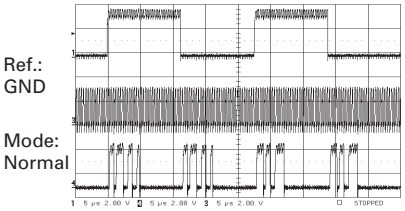
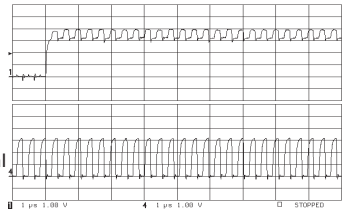
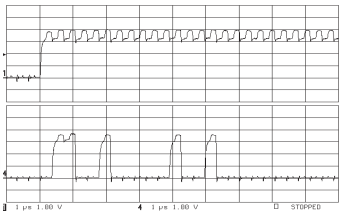
CD-ROM >> CD-DA mode change(Band key)



⑦ SIN 1V/div 500ms/div
⑧ CIN 500mV/div
⑨ TIN 500mV/div

CD-DA >> CD-ROM mode change(Band key)



⑯ LRCK 2V/div 5µs/div ⑰ BCK 2V/div ⑱ DOUT 2V/div Digtal audio waveform  Ref.: GND Mode: Normal	⑯ LRCK 1V/div 1µs/div ⑰ BCK 1V/div Digtal audio waveform  Ref.: GND Mode: Normal	⑯ LRCK 1V/div 1µs/div ⑱ DOUT 1V/div Analog audio waveform  Ref.: AGND Mode: Normal

A

B

C

D

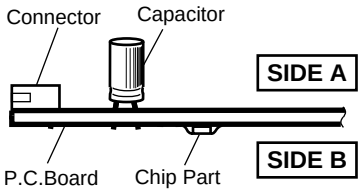
E

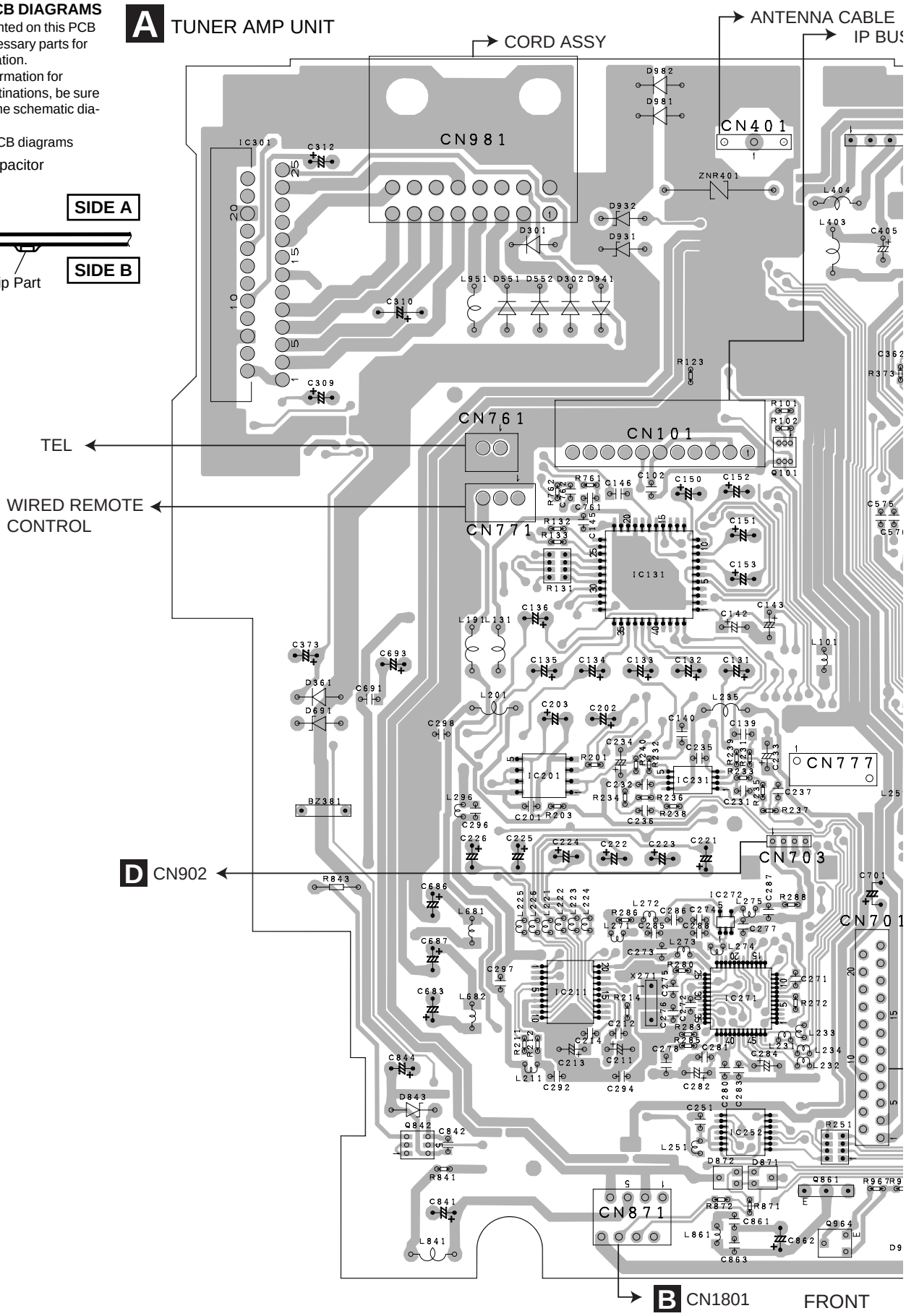
F

4. PCB CONNECTION DIAGRAM
4.1 TUNER AMP UNIT

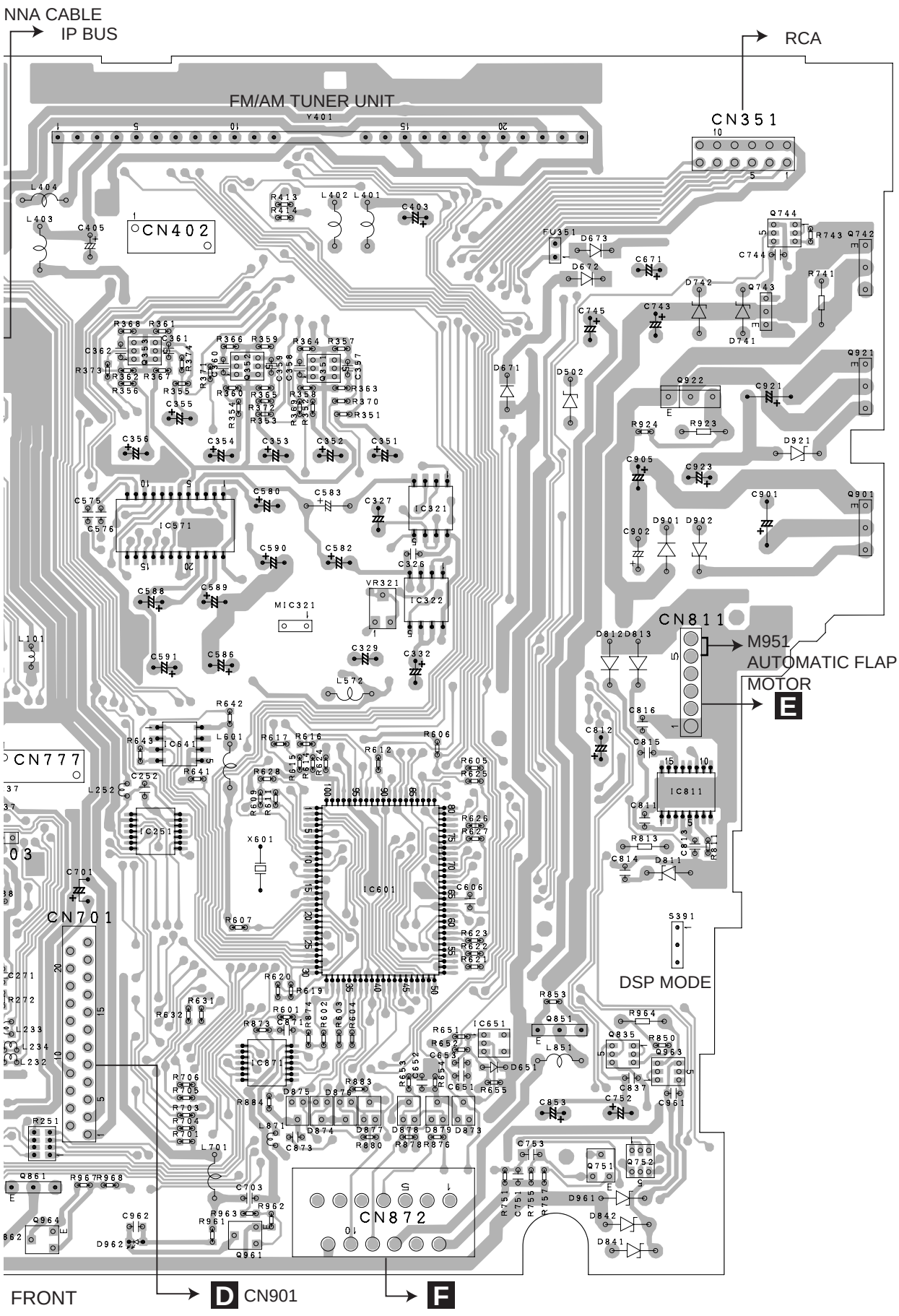
NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams





SIDE A



IC,Q

IC301

Q744
Q742

Q743

Q352 Q353
Q921 Q351
Q922

Q101
Q901
IC321
IC571

IC131
VR321
IC322

IC641

IC201 IC231
IC811

IC251

IC601 IC272

IC211
IC271
Q851 IC651
Q835 Q963
IC871

Q842
IC252
Q752
Q751 Q861

Q964

Q961

A

A TUNER AMP UNIT

IC,Q

Q402 Q401

IC671

Q941 Q931

Q741

Q951 IC551

Q501

Q364

Q923 Q301

IC101

Q902

Q321

Q131 IC691

IC173

Q692 IC171 IC172

Q811

Q691

Q812

IC681

Q651 Q962

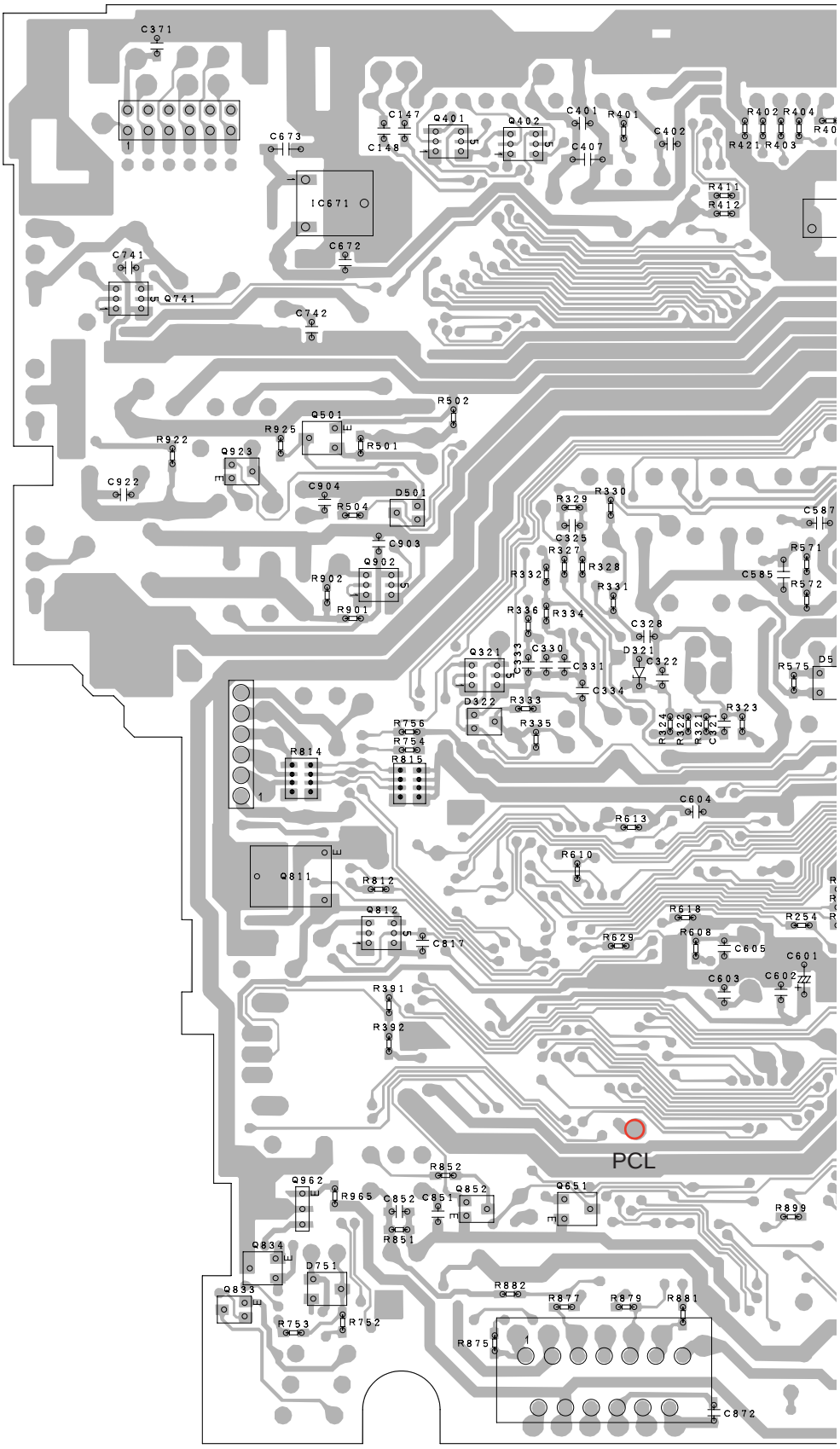
Q852

Q834

Q841 Q833

Q862

Q965



A

B

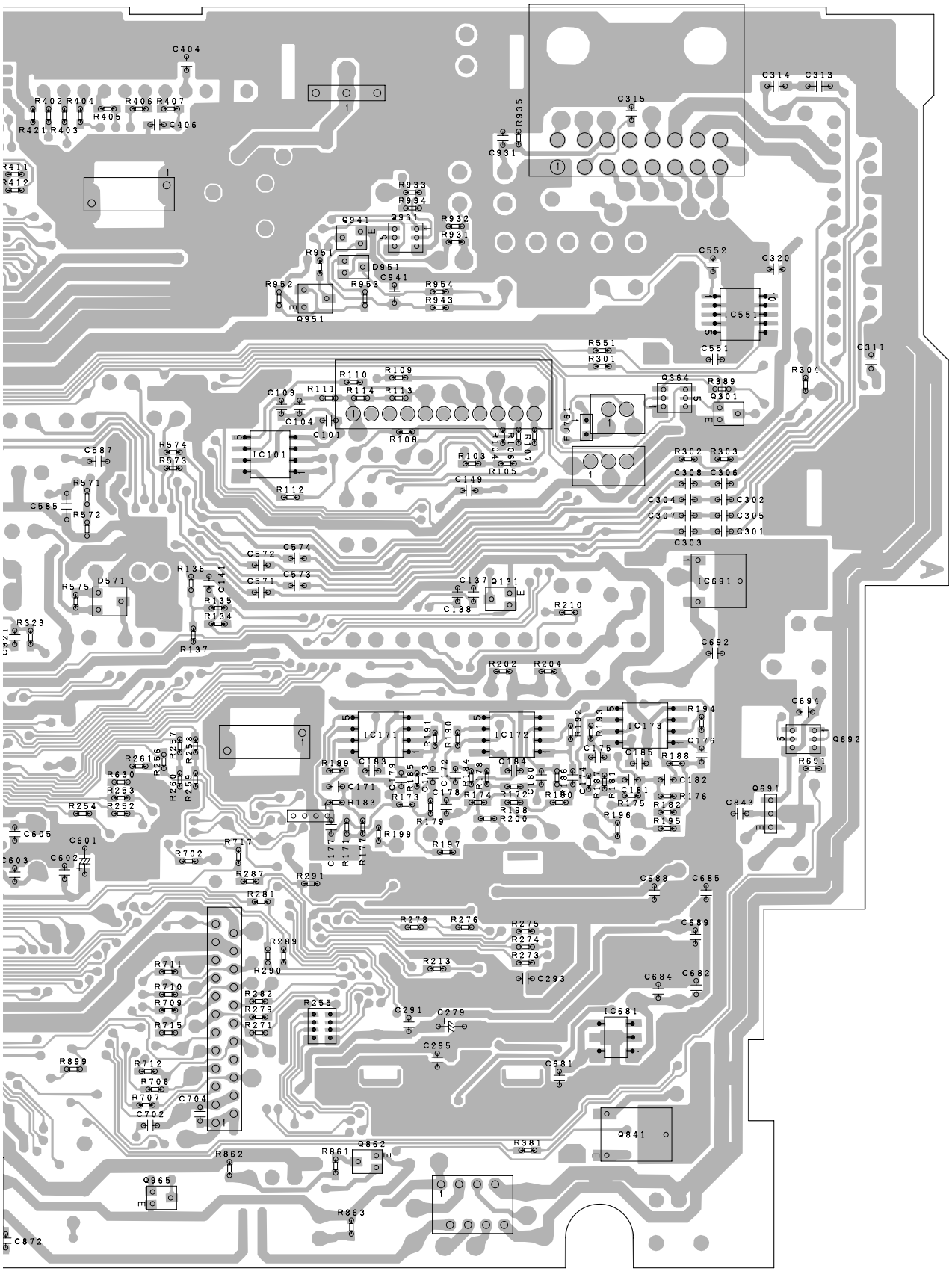
C

D

E

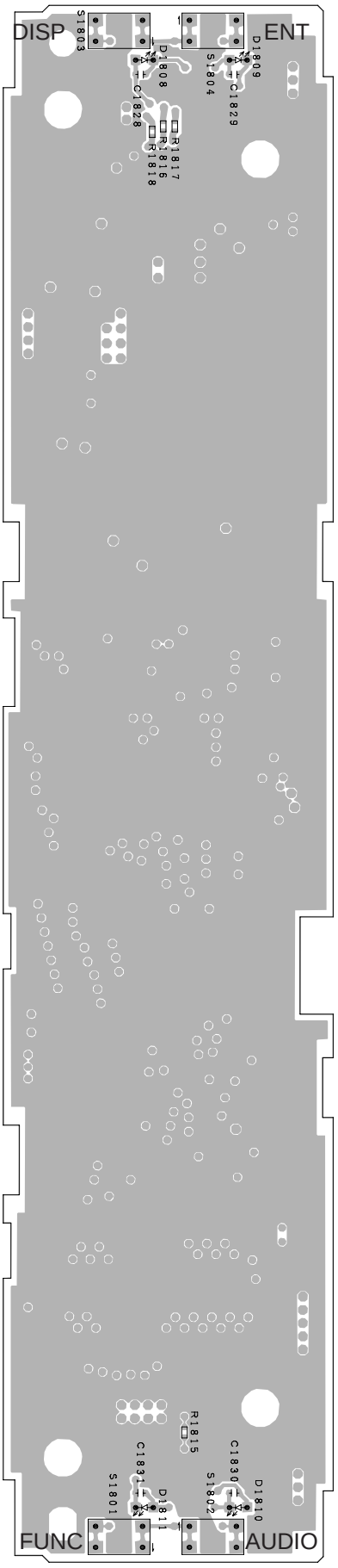
F

SIDE B

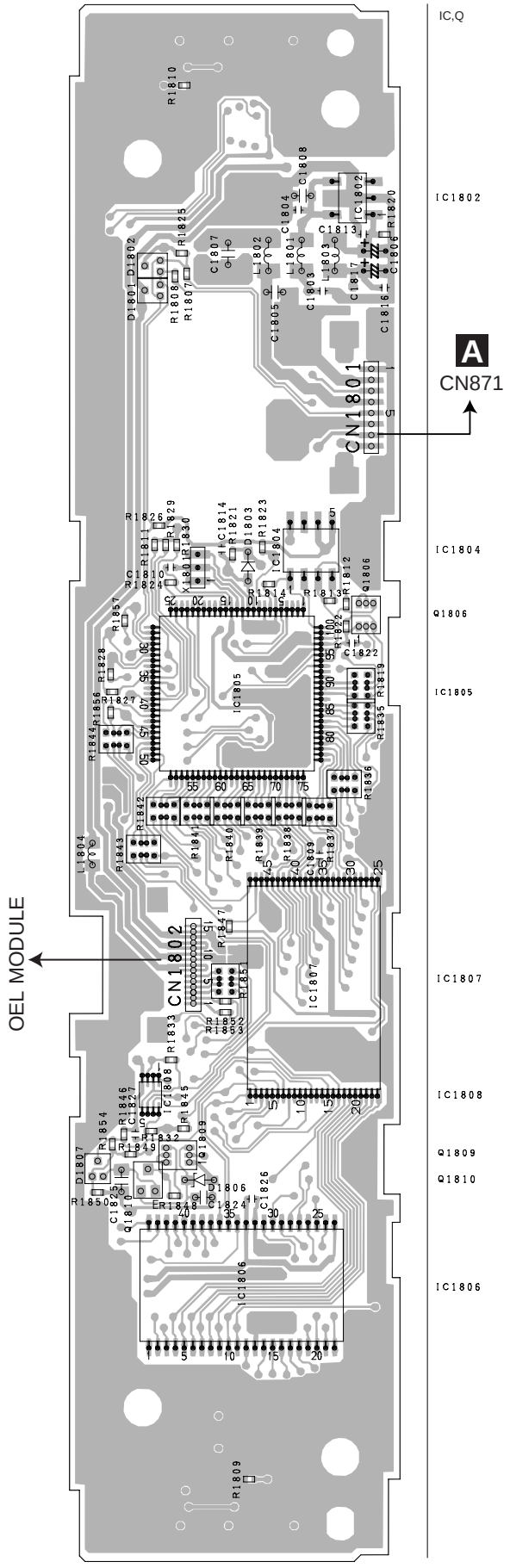


4.2 KEYBOARD UNIT(OEL)

B KEYBOARD UNIT(OEL) SIDE A

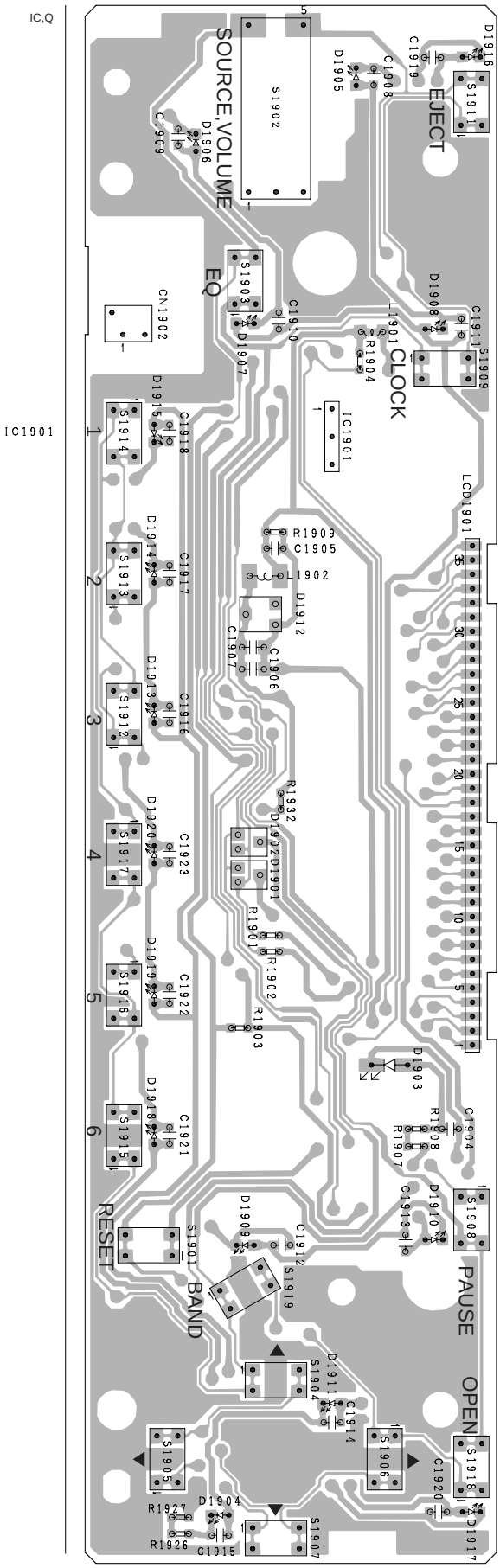


B KEYBOARD UNIT(OEL) SIDE B



4.3 KEYBOARD UNIT(LCD)

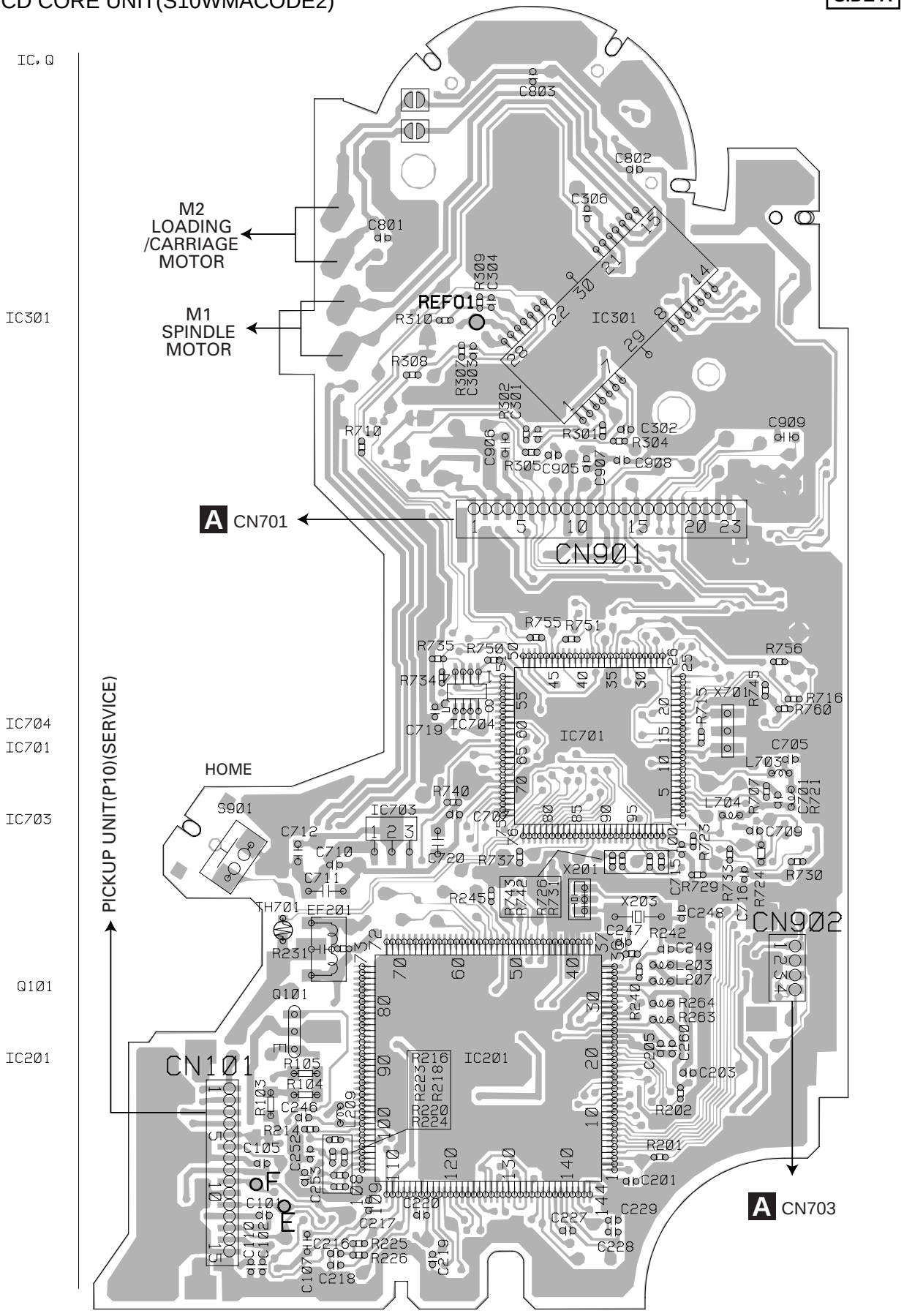
C KEYBOARD UNIT(LCD) SIDE A



4.4 CD MECHANISM MODULE

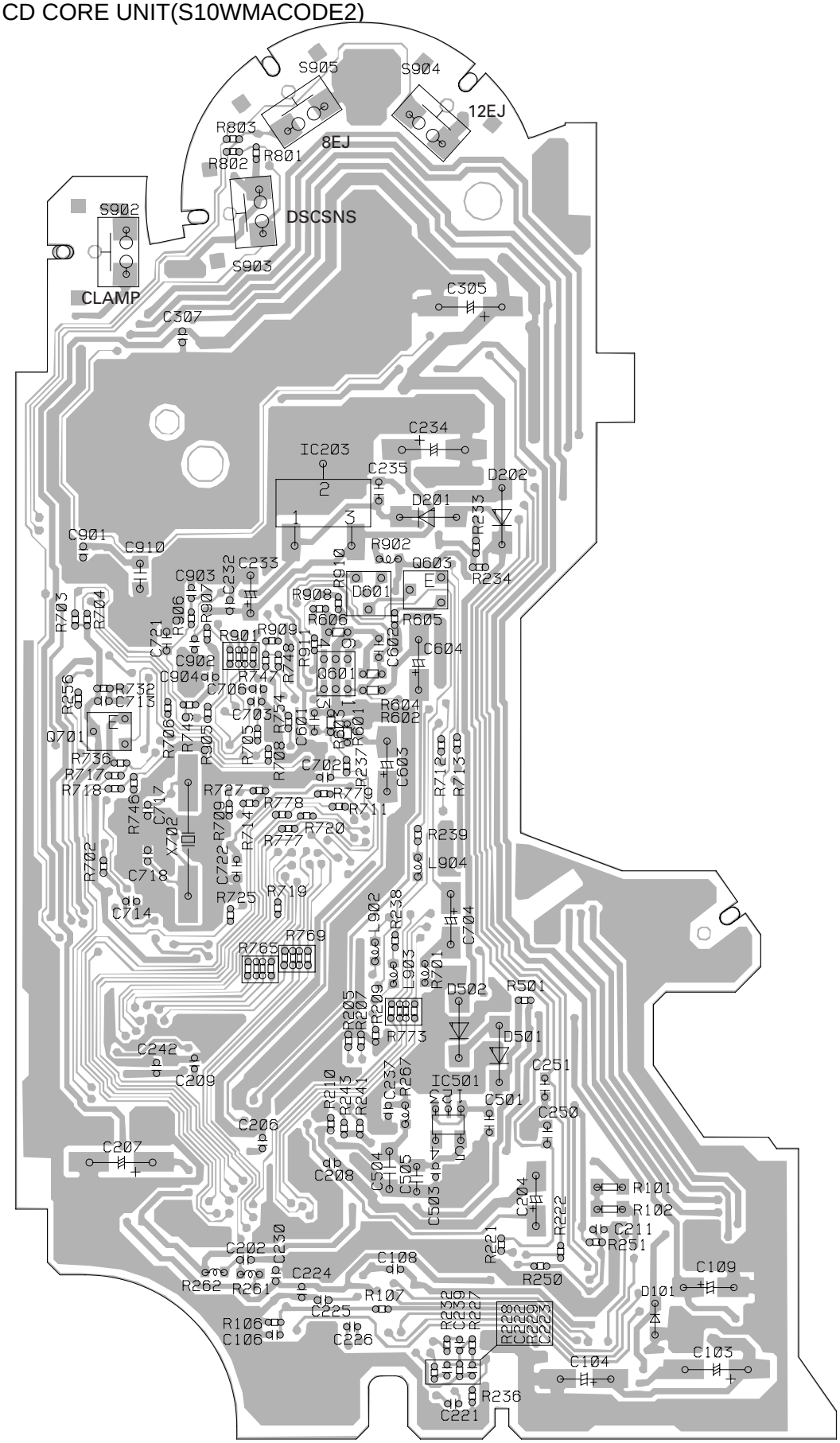
D CD CORE UNIT(S10WMACODE2)

SIDE A



D CD CORE UNIT(S10WMACODE2)

SIDE B



IC, Q

IC203

Q603

Q601

Q701

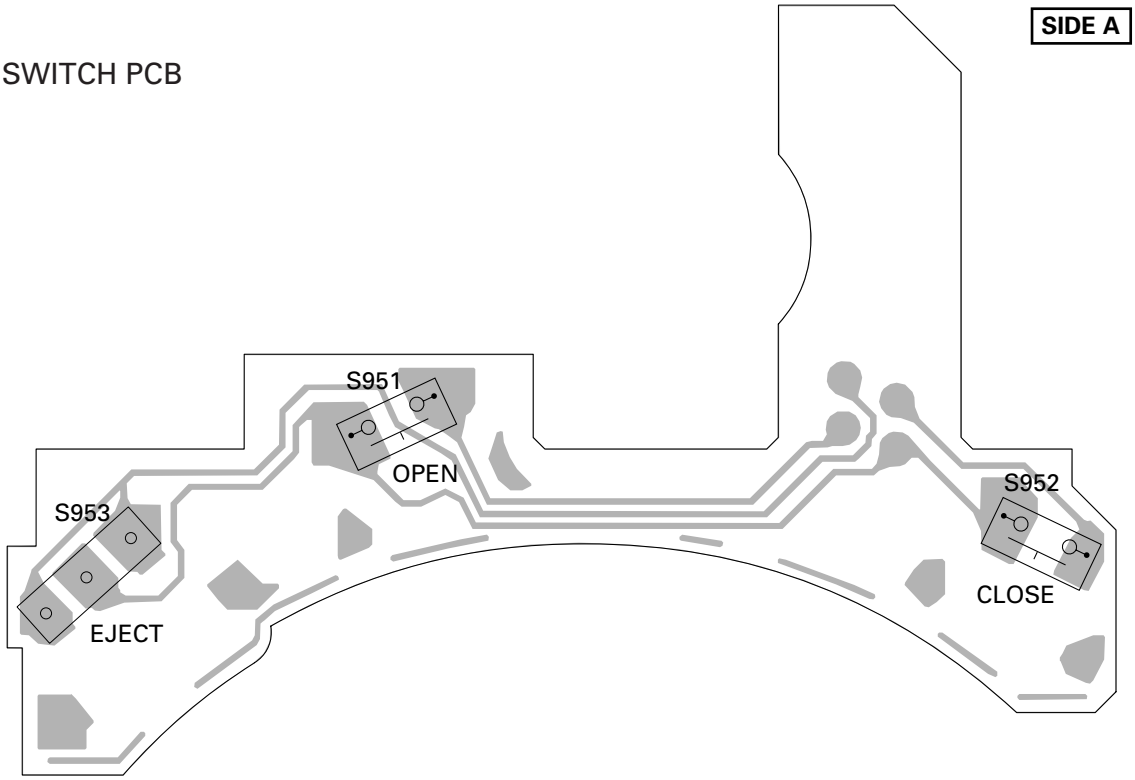
IC501

D

4.5 SWITCH PCB

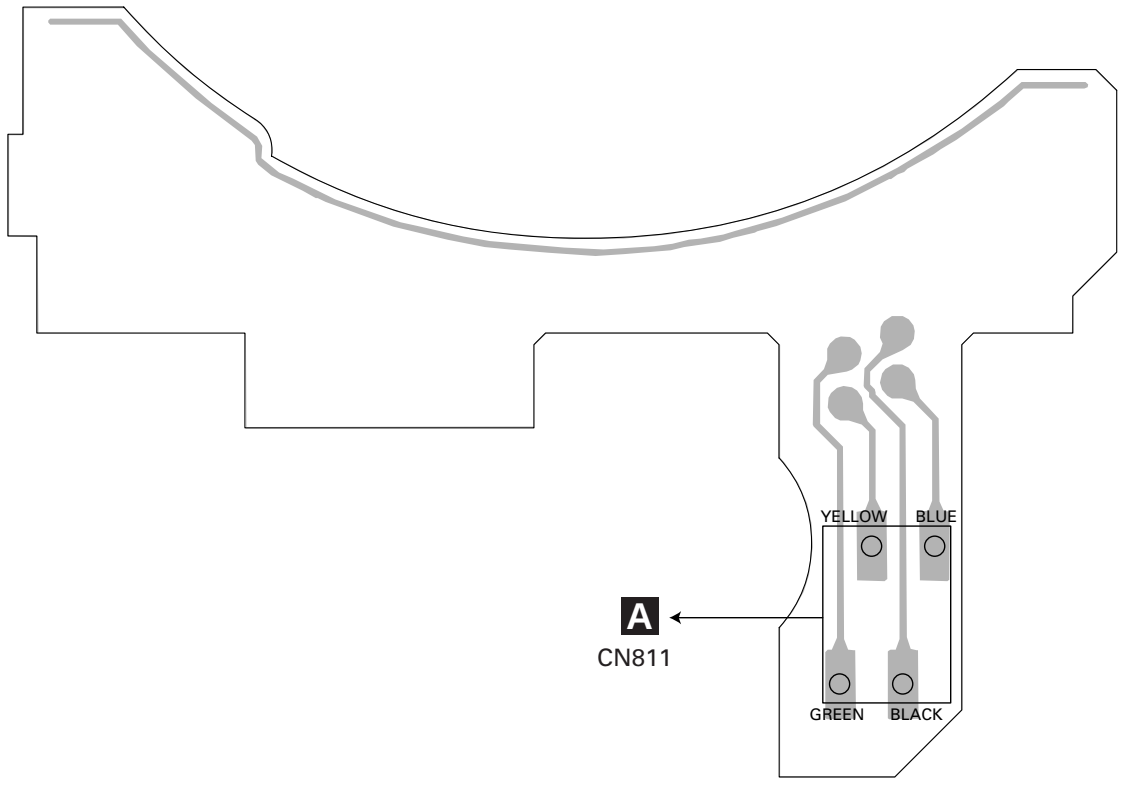
E SWITCH PCB

SIDE A



E SWITCH PCB

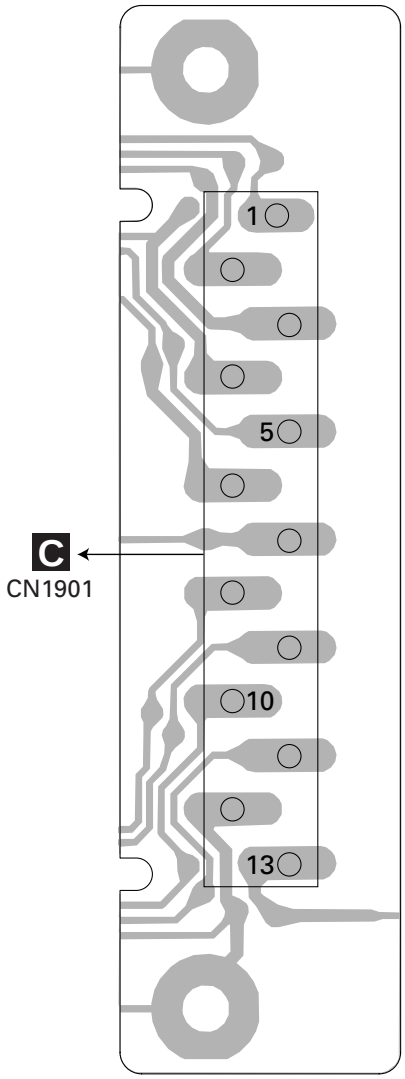
SIDE B



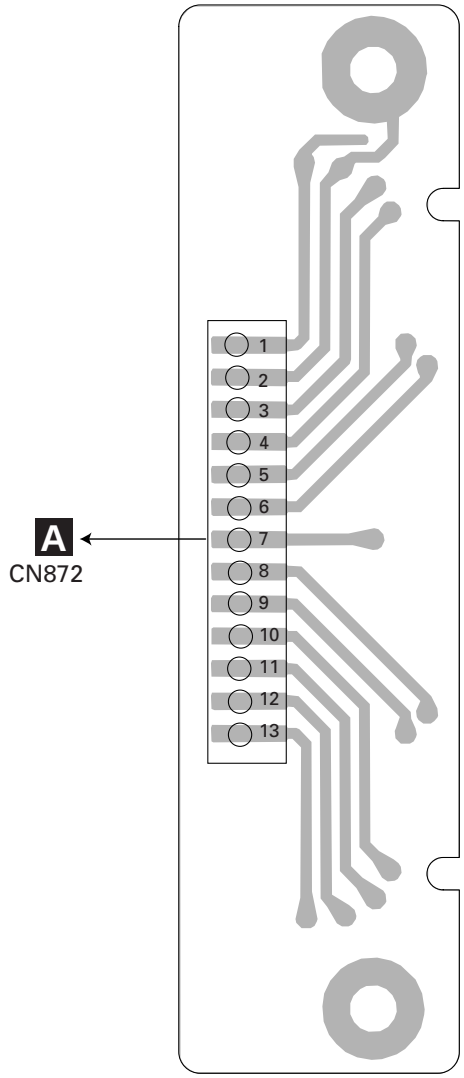
E

4.6 CONNECTOR PCB

F CONNECTOR PCB **SIDE A**



F CONNECTOR PCB **SIDE B**



5. ELECTRICAL PARTS LIST

NOTE:

¥ Parts whose parts numbers are omitted are subject to being not supplied.

¥ The part numbers shown below indicate chip components.

Chip Resistor

RS1/◯S◯◯◯J,RS1/◯◯S◯◯◯J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

¥ The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

A

Unit Number:CWM9185(P960MP)
Unit Number:CWM9186(P9600MP)
Unit Number:CWM9187(P9650MP)
Unit Name:Tuner Amp Unit

MISCELLANEOUS

Circuit Symbol and No.		Part No.
IC 101	IC	HA12240FP
IC 131	IC	PML011A
IC 171	IC	NJM4558MD
IC 172	IC	NJM4558MD
IC 173	IC	NJM4558MD
IC 201	IC	NJM4558MD
IC 211	IC	PCM1606EG
IC 231	IC	NJM2100V
IC 251	IC	TC74VHC08FT
IC 252	IC	TC74VHC08FT
IC 271	IC	AK7730VT
IC 272	IC	TC7SH08FU
IC 301	IC	PAL007A
IC 321	IC	NJM4558MD
IC 322	IC	NJM4558MD
IC 571	IC	PA2028A
IC 601	IC(P960MP,P9600MP)	PD5914A
	IC(P9650MP)	PD5915A
IC 651	IC	BD4835G
IC 671	IC	NJM2391DL1-33
IC 681	IC	S-818A33AUC-BGN
IC 691	IC	BA05FP
IC 811	IC	BA6288FS
IC 871	IC	TC74VHCT125AFT
Q 101	Transistor	UMF23N
Q 301	Transistor	DTC124EU
Q 321	Transistor	IMD2A
Q 351	Transistor(P960MP,P9650MP)	HN1C03F
	Transistor(P9600MP)	IMH3A
Q 352	Transistor(P960MP,P9650MP)	HN1C03F
	Transistor(P9600MP)	IMH3A
Q 353	Transistor(P960MP,P9650MP)	HN1C03F
	Transistor(P9600MP)	IMH3A
Q 364	Transistor	IMD2A
Q 501	Transistor	2SC2412K
Q 651	Transistor	2SC2412K
Q 691	Transistor	2SD1767
Q 692	Transistor	IMD2A
Q 741	Transistor	IMD2A
Q 742	Transistor	2SD2396
Q 743	Transistor	2SD1767
Q 744	Transistor	IMD2A
Q 751	Transistor	2SC3052-12
Q 752	Transistor	IMD2A
Q 811	Transistor	2SD1760F5
Q 812	Transistor	IMD3A
Q 833	Transistor	DTC114EU
Q 834	Transistor	2SC2412K
Q 835	Transistor	IMD2A
Q 841	Transistor	2SD1760F5
Q 842	Transistor	IMD2A
Q 851	Transistor	2SB808
Q 852	Transistor	DTC114EU
Q 861	Transistor	2SB808
Q 862	Transistor	DTC114EU
Q 901	Transistor	2SD2396
Q 902	Transistor	IMD2A
Q 921	Transistor	2SD2396
Q 922	Transistor	2SB1243
Q 923	Transistor	DTC114EU
Q 931	Transistor	IMX1
Q 941	Transistor	DTC114EU
Q 951	Transistor	2SA1037K
Q 961	Transistor	2SC2412K
Q 962	Transistor	2SD1767
Q 963	Transistor	IMD2A
Q 964	Transistor	2SA1235A-12
Q 965	Transistor	DTC114EU
D 301	Diode	MPG06G-6415G50
D 302	Diode	MPG06G-6415G50
D 321	Diode	UDZS3R9(B)
D 322	Diode	RB706F-40
D 361	Diode	1SS133
D 501	Diode	DAN202U
D 502	Diode	HZS9L(A2)
D 571	Diode(P960MP,P9650MP)	1SS396
D 671	Diode	1SR154-400
D 672	Diode	1SR154-400
D 673	Diode	1SR154-400
D 691	Diode	HZS12L(A1)
D 741	Diode	HZS9L(B1)
D 742	Diode	HZS6L(C1)

Circuit Symbol and No.		Part No.
D 751	Diode	MA3039(L)
D 811	Diode	HZS7L(C3)
D 812	Diode	1SS133
D 813	Diode	1SS133
D 841	Diode	HZS6L(A2)
D 842	Diode	HZS9L(A1)
D 843	Diode	HZS9L(C2)
D 873	Diode Network	DA204U
D 874	Diode	DAN202U
D 875	Diode	DAP202U
D 876	Diode	DAN202U
D 877	Diode	DAP202U
D 878	Diode	DAN202U
D 879	Diode	DAP202U
D 901	Diode	MPG06G-6415G50
D 902	Diode	HZS6L(B1)
D 921	Diode	HZS9L(B2)
D 931	Diode	HZS7L(C3)
D 932	Diode	HZS7L(A1)
D 941	Diode	MPG06G-6415G50
D 951	Diode	DAN202U
D 961	Diode	HZS11L(A1)
D 962	LED	SML310BA1T
D 981	Diode	MPG06G-6415G50
D 982	Diode	MPG06G-6415G50
ZNR401	Surge Protector	DSP-201M-A21F
L 101	Inductor	LCTA2R2J2520
L 131	Inductor	LAYU2R2K
L 191	Inductor	LAYU2R2K
L 201	Inductor	LAYU2R2K
L 211	Inductor	CTF1379
L 251	Inductor	CTF1379
L 252	Inductor	CTF1379
L 271	Inductor	CTF1379
L 272	Inductor	CTF1389
L 273	Inductor	CTF1389
L 275	Inductor	CTF1389
L 401	Inductor	LAYU1R0K
L 402	Inductor	LAYU100K
L 403	Inductor	LAYU1R0K
L 404	Inductor	LAYU4R7K
L 572	Ferri-Inductor	LAU101K
L 601	Inductor	LAYU100K
L 681	Inductor	CTF1530
L 682	Inductor	CTF1530
L 701	Inductor	LAYU100K
L 841	Inductor	LAYU2R2K
L 851	Inductor	LAYU100K
L 861	Chip Felight Beads	CTF1399
L 871	Inductor	CTF1379
L 951	Inductor	LAYU2R2K
X 271	Oscillator 16.934MHz	CSS1620
X 601	Crystal Resonator 15.000MHz	CSS1653
S 391	Slide Switch(DSP MODE) (P960MP,P9650MP)	CSH1051
VR321	Semi-fixed 10kΩ(B)	CCP1229
FU351	Fuse 3A ⚠	CEK1286
MIC321	Microphone	CPM1011
BZ381	Buzzer	CPV1062
	FM/AM Tuner Unit	CWE1646

Circuit Symbol and No.	Part No.
RESISTORS	
R 101	RS1/16S562J
R 102	RS1/16S332J
R 103	RS1/16S181J
R 104	RS1/16S181J
R 105	RS1/16S223J
R 106	RS1/16S223J
R 107	RS1/16S102J
R 108	RS1/16S102J
R 109	RS1/16S222J
R 110	RS1/16S101J
R 111	RS1/16S101J
R 112	RS1/16S102J
R 113	RS1/16S150J
R 114	RS1/16S470J
R 131	RAB4C0R0J
R 132	RS1/16S0R0J
R 133	RS1/16S0R0J
R 134	RS1/16S682J
R 135	RS1/16S103J
R 136	RS1/16S103J
R 137	RS1/16S153J
R 171	RS1/16S223J
R 172	RS1/16S223J
R 173	RS1/16S223J
R 174	RS1/16S223J
R 175	RS1/16S223J
R 176	RS1/16S223J
R 177	RS1/16S682J
R 178	RS1/16S682J
R 179	RS1/16S682J
R 180	RS1/16S682J
R 181	RS1/16S682J
R 182	RS1/16S682J
R 183	RS1/16S682J
R 184	RS1/16S682J
R 185	RS1/16S682J
R 186	RS1/16S682J
R 187	RS1/16S682J
R 188	RS1/16S682J
R 189	RS1/16S101J
R 190	RS1/16S101J
R 191	RS1/16S101J
R 192	RS1/16S101J
R 193	RS1/16S101J
R 194	RS1/16S101J
R 195	RS1/16S122J
R 196	RS1/16S122J
R 197	RS1/16S122J
R 198	RS1/16S122J
R 199	RS1/16S122J
R 200	RS1/16S122J
R 201	RS1/16S473J
R 202	RS1/16S473J
R 203	RS1/16S473J
R 204	RS1/16S433J
R 211	RS1/16S103J
R 212	RS1/16S103J

Circuit Symbol and No.		Part No.
R 213		RS1/16S102J
R 231		RS1/16S223J
R 232		RS1/16S223J
R 233		RS1/16S223J
R 234		RS1/16S223J
R 235		RS1/16S223J
R 236		RS1/16S223J
R 237		RS1/16S331J
R 238		RS1/16S331J
R 239		RS1/16S331J
R 240		RS1/16S331J
R 251		RAB4C681J
R 252		RS1/16S681J
R 253		RS1/16S681J
R 254		RS1/16S681J
R 255		RAB4C681J
R 256		RS1/16S153J
R 257		RS1/16S153J
R 258		RS1/16S153J
R 259		RS1/16S223J
R 260		RS1/16S223J
R 261		RS1/16S223J
R 271		RS1/16S101J
R 273		RS1/16S101J
R 274		RS1/16S101J
R 275		RS1/16S101J
R 276		RS1/16S101J
R 278		RS1/16S101J
R 279		RS1/16S101J
R 280		RS1/16S222J
R 281		RS1/16S681J
R 282		RS1/16S101J
R 285		RS1/16S562J
R 286		RS1/16S0R0J
R 287		RS1/16S0R0J
R 288		RS1/16S0R0J
R 289		RS1/16S681J
R 290		RS1/16S681J
R 301		RS1/16S103J
R 302		RS1/16S103J
R 303		RS1/16S103J
R 304		RS1/16S331J
R 321		RS1/16S104J
R 322		RS1/16S152J
R 323		RS1/16S222J
R 324		RS1/16S152J
R 327		RS1/16S102J
R 328		RS1/16S101J
R 329		RS1/16S563J
R 330		RS1/16S103J
R 331		RS1/16S103J
R 332		RS1/16S153J
R 333		RS1/16S104J
R 334		RS1/16S153J
R 335		RS1/16S104J
R 336		RS1/16S223J
R 351		RS1/16S820J
R 352		RS1/16S820J
R 353		RS1/16S820J
R 354		RS1/16S820J

Circuit Symbol and No.		Part No.
R 355		RS1/16S820J
R 356		RS1/16S820J
R 357		RS1/16S223J
R 358		RS1/16S223J
R 359		RS1/16S223J
R 360		RS1/16S223J
R 361		RS1/16S223J
R 362		RS1/16S223J
R 363		RS1/16S471J
R 364		RS1/16S471J
R 365		RS1/16S471J
R 366		RS1/16S471J
R 367		RS1/16S471J
R 368		RS1/16S471J
R 369	(P960MP,P9650MP)	RS1/16S103J
	(P9600MP)	RS1/16S0R0J
R 370	(P960MP,P9650MP)	RS1/16S103J
	(P9600MP)	RS1/16S0R0J
R 371	(P960MP,P9650MP)	RS1/16S103J
	(P9600MP)	RS1/16S0R0J
R 372	(P960MP,P9650MP)	RS1/16S103J
	(P9600MP)	RS1/16S0R0J
R 373	(P960MP,P9650MP)	RS1/16S103J
	(P9600MP)	RS1/16S0R0J
R 374	(P960MP,P9650MP)	RS1/16S103J
	(P9600MP)	RS1/16S0R0J
R 381		RS1/16S102J
R 389		RS1/16S102J
R 391		RS1/16S102J
R 392		RS1/16S104J
R 401		RS1/16S681J
R 403		RS1/16S681J
R 404		RS1/16S681J
R 405		RS1/16S681J
R 406		RS1/16S681J
R 407		RS1/16S681J
R 501		RS1/16S103J
R 502		RS1/16S473J
R 504		RS1/16S473J
R 571		RS1/16S103J
R 572		RS1/16S103J
R 575	(P9600MP)	RS1/16S0R0J
R 601		RS1/16S0R0J
R 602		RS1/16S0R0J
R 605	(P960MP)	RS1/16S104J
R 606	(P9600MP)	RS1/16S104J
R 607		RS1/16S473J
R 608		RS1/16S0R0J
R 609		RS1/16S104J
R 610		RS1/16S681J
R 611		RS1/16S0R0J
R 613		RS1/16S473J
R 614	(P960MP,P9600MP)	RS1/16S103J
R 615	(P960MP,P9600MP)	RS1/16S103J
R 616	(P960MP,P9600MP)	RS1/16S102J
R 617	(P960MP,P9600MP)	RS1/16S102J
R 618		RS1/16S472J
R 619		RS1/16S472J
R 620		RS1/16S472J
R 621		RS1/16S681J

Circuit Symbol and No.	Part No.
R 622	RS1/16S681J
R 623	RS1/16S681J
R 624	RS1/16S104J
R 625	RS1/16S104J
R 626	RS1/16S104J
R 627	RS1/16S104J
R 628	RS1/16S473J
R 629	RS1/16S473J
R 630	RS1/16S473J
R 631	RS1/16S102J
R 632	RS1/16S102J
R 642	RS1/16S104J
R 651	RS1/16S102J
R 652	RS1/16S102J
R 653	RS1/16S222J
R 654	RS1/16S473J
R 655	RS1/16S183J
R 691	RS1/16S271J
R 702	RS1/16S473J
R 703	RS1/16S682J
R 704	RS1/16S682J
R 705	RS1/16S682J
R 706	RS1/16S682J
R 707	RS1/16S221J
R 708	RS1/16S221J
R 709	RS1/16S221J
R 710	RS1/16S221J
R 711	RS1/16S221J
R 712	RS1/16S221J
R 715	RS1/16S681J
R 717	RS1/16S681J
R 741	RD1/4PU391J
R 743	RS1/16S331J
R 751	RS1/16S104J
R 752	RS1/16S222J
R 753	RS1/16S561J
R 754	RS1/16S683J
R 755	RS1/16S153J
R 756	RS1/16S682J
R 757	RS1/16S152J
R 811	RS1/16S102J
R 812	RS1/16S102J
R 813	RD1/4PU271J
R 814	RAB4C102J
R 815	RAB4C104J
R 841	RS1/16S1R0J
R 843	RD1/4PU271J
R 850	RS1/16S332J
R 851	RS1/16S222J
R 852	RS1/16S102J
R 853	RS1/16S472J
R 861	RS1/16S102J
R 862	RS1/16S472J
R 863	RS1/16S222J
R 871	RS1/16S222J
R 872	RS1/16S222J
R 873	RS1/16S104J
R 874	RS1/16S104J
R 875	RS1/16S222J
R 876	RS1/16S471J

Circuit Symbol and No.	Part No.
R 877	RS1/16S222J
R 878	RS1/16S222J
R 879	RS1/16S222J
R 880	RS1/16S222J
R 881	RS1/16S222J
R 882	RS1/16S473J
R 883	RS1/16S104J
R 884	RS1/16S473J
R 901	RS1/16S223J
R 902	RS1/16S272J
R 922	RS1/16S821J
R 923	RD1/4PU182J
R 924	RS1/16S223J
R 925	RS1/16S223J
R 931	RS1/16S104J
R 932	RS1/16S473J
R 933	RS1/16S103J
R 934	RS1/16S473J
R 935	RS1/16S472J
R 943	RS1/16S103J
R 951	RS1/16S102J
R 952	RS1/16S472J
R 953	RS1/16S472J
R 954	RS1/16S153J
R 961	RS1/16S151J
R 962	RS1/16S103J
R 963	RS1/16S562J
R 964	RD1/4PU391J
R 965	RS1/16S1R0J
R 967	RS1/16S472J
R 968	RS1/16S103J

CAPACITORS

C 102	CKSRYB104K25
C 103	CKSRYB102K50
C 104	CKSRYB102K50
C 131	CEJQ4R7M35
C 132	CEJQ4R7M35
C 133	CEJQ4R7M35
C 134	CEJQ4R7M35
C 135	CEJQ4R7M35
C 136	CEJQ4R7M35
C 137	CKSRYB472K50
C 138	CKSRYB472K50
C 139	CKSQYB225K10
C 140	CKSQYB225K10
C 141	CKSRYB104K25
C 142	CSZS100M10
C 143	CSZS100M10
C 145	CKSRYB104K25
C 146	CKSQYB225K10
C 147	CKSRYB104K25
C 148	CKSRYB104K25
C 149	CKSRYB105K10
C 150	CEJQ2R2M50
C 151	CEJQ2R2M50
C 152	CEJQ2R2M50
C 153	CEJQ2R2M50
C 171	CCSRCH681J50

Circuit Symbol and No.		Part No.
C 172		CCSRCH681J50
C 173		CCSRCH681J50
C 174		CCSRCH681J50
C 175		CCSRCH681J50
C 176		CCSRCH681J50
C 177		CCSRCH331J50
C 178		CCSRCH331J50
C 179		CCSRCH331J50
C 180		CCSRCH331J50
C 181		CCSRCH331J50
C 182		CCSRCH331J50
C 183		CKSRYB104K25
C 184		CKSRYB104K25
C 185		CKSRYB104K25
C 201		CKSRYB104K25
C 202		CEJQ100M16
C 203		CEJQ100M16
C 211		CSZS100M16
C 212		CKSRYB104K25
C 213		CSZS100M10
C 214		CKSRYB104K25
C 221		CEJQ100M16
C 222		CEJQ100M16
C 223		CEJQ100M16
C 224		CEJQ100M16
C 225		CEJQ100M16
C 226		CEJQ100M16
C 231		CCSRCH220J50
C 232		CCSRCH220J50
C 233		CSZS100M10
C 234		CSZS100M10
C 235		CKSRYB104K25
C 236		CKSRYB332K50
C 237		CKSRYB332K50
C 251		CKSRYB104K25
C 252		CKSRYB104K25
C 271		CKSRYB104K25
C 272		CKSRYB104K25
C 273		CCSRCH680J50
C 275		CCSRCH100D50
C 276		CCSRCH100D50
C 277		CKSRYB104K25
C 278		CKSQYB682K50
C 279		CSZS100M10
C 280		CKSRYB104K25
C 281		CKSRYB104K25
C 282		CSZS100M10
C 283		CKSRYB104K25
C 284		CSZS100M10
C 286		CKSRYB103K50
C 287		CCSRCH560J50
C 291		CKSRYB102K50
C 292	(P9650MP)	CCSRCH101J50
C 293	(P9650MP)	CKSRYB102K50
C 297	(P960MP,P9600MP)	CKSRYB102K50
C 301		CKSRYB474K10
C 302		CKSRYB474K10
C 303		CKSRYB474K10
C 304		CKSRYB474K10
C 305		CKSRYB474K10

Circuit Symbol and No.		Part No.
C 306		CKSRYB474K10
C 307		CKSRYB474K10
C 308		CKSRYB474K10
C 309		CEHAR330M10
C 310	3300µF/16V	CCH1486
C 311		CKSRYB104K25
C 312		CEHAR100M16
C 313		CKSQYB225K10
C 314		CKSQYB225K10
C 321		CKSRYB105K10
C 322		CKSRYB105K10
C 325		CCSRCH101J50
C 326		CKSRYB105K10
C 327		CEALNP4R7M16
C 328		CKSRYB105K10
C 329		CEALNP4R7M16
C 330		CKSRYB474K10
C 331		CKSRYB104K25
C 332		CEAL100M16
C 333		CKSRYB105K10
C 334		CKSRYB105K10
C 351		CEJQ100M50
C 352		CEJQ100M50
C 353		CEJQ100M50
C 354		CEJQ100M50
C 355		CEJQ100M50
C 356		CEJQ100M50
C 357		CKSRYB222K50
C 358		CKSRYB222K50
C 359		CKSRYB222K50
C 360		CKSRYB222K50
C 361		CKSRYB222K50
C 362		CKSRYB222K50
C 371		CKSRYB102K50
C 373		CEHAR220M16
C 401		CKSRYB103K50
C 402		CKSRYB103K50
C 403		CEJQ470M10
C 404		CKSRYB103K50
C 405		CEJQ101M10
C 407		CKSYB475K10
C 571		CKSRYB105K10
C 572		CKSRYB105K10
C 573		CKSRYB105K10
C 574		CKSRYB105K10
C 575		CKSRYB105K10
C 576		CKSRYB105K10
C 580		CEAL4R7M35
C 582		CEJQ101M16
C 583		CASAQ3R3M16
C 585		CKSYB684K25
C 586		CEAL100M16
C 587		CKSQYB225K10
C 588		CEJQ330M25
C 589		CEJQ330M25
C 590	(P960MP,P9650MP)	CEJQ330M25
C 591	(P960MP,P9650MP)	CEJQ330M25
C 601		CSZS4R7M16
C 602		CKSRYB103K50
C 603		CCSRCH180J50

Circuit Symbol and No.		Part No.
C 604		CCSRCH101J50
C 605		CCSRCH180J50
C 652		CKSRYB104K25
C 653		CKSRYB105K10
C 671		CEJQ220M6R3
C 672		CKSRYB103K50
C 673		CKSYB475K10
C 681		CKSRYB474K10
C 682		CKSRYB103K50
C 683		CEJQ220M6R3
C 684		CKSRYB105K10
C 685		CKSRYB105K10
C 686		CEJQ101M6R3
C 687		CEJQ101M6R3
C 688		CKSRYB104K25
C 689		CKSRYB104K25
C 691		CKSQYB474K16
C 692		CKSRYB103K50
C 693		CEJQ101M6R3
C 694		CKSRYB104K25
C 701	470µF/10V	CCH1438
C 741		CKSRYB473K50
C 742		CKSRYB102K50
C 743		CEJQ101M16
C 744		CKSRYB473K50
C 745		CEJQ101M16
C 751		CKSRYB681K50
C 752		CEJQ101M6R3
C 753		CKSQYB225K10
C 811		CCSRCH101J50
C 812		CEJQ220M16
C 813		CKSRYB104K25
C 814		CKSRYB102K50
C 815		CKSRYB102K50
C 816		CCSRCH101J50
C 837		CKSRYB103K50
C 841		CEJQ470M16
C 842		CKSRYB104K25
C 843		CCSRCH101J50
C 844		CEJQ330M25
C 851		CKSRYB104K25
C 852		CKSRYB104K25
C 853		CEJQ470M10
C 861		CKSRYB104K25
C 862		CEJQ470M10
C 863		CKSRYB104K25
C 871		CKSRYB473K50
C 901	470µF/16V	CCH1331
C 902	470µF/16V	CCH1459
C 903		CKSRYB472K50
C 904		CKSRYB103K50
C 905		CEJQ470M10
C 921		CEJQ221M10
C 922		CKSRYB103K50
C 923		CEJQ101M16
C 931		CKSRYB104K25
C 941		CKSQYB105K16
C 961		CKSRYB473K50
C 962		CKSRYB104K25

Circuit Symbol and No.		Part No.

B

Unit Number:CWM9191
Unit Name:Keyboard Unit(OEL)

MISCELLANEOUS

IC 1802	IC	S-818A33AUC-BGN
IC 1805	IC	PD5917A
IC 1806	IC	PD8122A
IC 1807	IC	PD6460A
IC 1808	IC	TC7WH32FK
D 1803	Diode	1SS355
D 1808	LED	SML310BA1T
D 1809	LED	SML310BA1T
D 1810	LED	SML310BA1T
D 1811	LED	SML310BA1T
L 1801	Inductor	CTF1530
L 1802	Inductor	CTF1484
L 1803	Inductor	CTF1530
L 1804	Chip Felight Beads	CTF1399
X 1801	Radiator 10.0MHz	CSS1577
S 1801	Push Switch	CSG1111
S 1802	Push Switch	CSG1111
S 1803	Push Switch	CSG1111
S 1804	Push Switch	CSG1111
	OEL Module	MXK8200

RESISTORS

R 1807		RS1/16SS222J
R 1808		RS1/16SS222J
R 1809		RS1/16SS271J
R 1810		RS1/16SS271J
R 1811		RS1/16SS473J
R 1812		RS1/16SS104J
R 1815		RS1/16SS101J
R 1816		RS1/16SS101J
R 1817		RS1/16SS101J
R 1818		RS1/16SS101J
R 1819		RAB4CQ681J
R 1820		RS1/16SS222J
R 1821		RS1/16SS154J
R 1822		RS1/16SS473J
R 1823		RS1/16SS0R0J
R 1824		RS1/16SS473J
R 1825		RS1/16SS473J
R 1826		RS1/16SS473J
R 1827		RS1/16SS0R0J
R 1828		RS1/16SS0R0J
R 1829		RS1/16SS473J
R 1830		RS1/16SS473J
R 1832		RS1/16SS0R0J
R 1835		RAB4CQ681J
R 1836		RAB4CQ681J
R 1837		RAB4CQ681J
R 1838		RAB4CQ681J
R 1839		RAB4CQ681J
R 1840		RAB4CQ681J
R 1841		RAB4CQ681J
R 1842		RAB4CQ681J
R 1843		RAB4CQ681J

Circuit Symbol and No.		Part No.
R 1844		RAB4CQ681J
R 1845		RS1/16SS473J
R 1846		RS1/16SS473J
R 1847		RS1/16SS473J
R 1849		RS1/16SS392J
R 1850		RS1/16SS682J
R 1851		RAB4CQ221J
R 1852		RS1/16SS221J
R 1853		RS1/16SS221J
R 1854		RS1/16SS0R0J
R 1856		RS1/16SS0R0J
R 1857		RS1/16SS0R0J

CAPACITORS

C 1805		CKSRYB105K10
C 1806		CSZSP4R7M10
C 1807		CKSQYB225K10
C 1808		CKSRYB474K10
C 1809		CKSSYB103K16
C 1810		CKSSYB103K16
C 1814		CKSSYB473K10
C 1816		CKSSYB103K16
C 1817		CSZSP4R7M10
C 1822		CKSSYB103K16
C 1826		CKSSYB103K16
C 1827		CKSSYB103K16
C 1828		CKSSYB104K10
C 1829		CKSSYB104K10
C 1830		CKSSYB104K10
C 1831		CKSSYB104K10

C
Unit Number:CWM9194
Unit Name:Keyboard Unit(LCD)

MISCELLANEOUS

IC 1901	IC	TSOP4840SB1
IC 1902	IC	PD6340A
Q 1906	Transistor	2SC3052-12
D 1903	LED	NSSW440-9159
D 1904	LED	SML310BA1T
D 1905	LED	SML310BA1T
D 1906	LED	SML310BA1T
D 1907	LED	SML310BA1T
D 1908	LED	SML310BA1T
D 1909	LED	SML310BA1T
D 1910	LED	SML310BA1T
D 1911	LED	SML310BA1T
D 1913	LED	SML310BA1T
D 1914	LED	SML310BA1T
D 1915	LED	SML310BA1T
D 1916	LED	SML310BA1T
D 1917	LED	SML310BA1T
D 1918	LED	SML310BA1T
D 1919	LED	SML310BA1T
D 1920	LED	SML310BA1T
L 1902	Inductor	CTF1530
X 1901	Ceramic Resonator 4.97MHz	CSS1573
S 1901	Push Switch	CSG1111

Circuit Symbol and No.		Part No.
S 1902	Encoder	CSD1104
S 1903	Push Switch	CSG1111
S 1904	Push Switch	CSG1111
S 1905	Push Switch	CSG1111
S 1906	Push Switch	CSG1111
S 1907	Push Switch	CSG1111
S 1908	Push Switch	CSG1111
S 1909	Push Switch	CSG1111
S 1911	Push Switch	CSG1111
S 1912	Push Switch	CSG1111
S 1913	Push Switch	CSG1111
S 1914	Push Switch	CSG1111
S 1915	Push Switch	CSG1111
S 1916	Push Switch	CSG1111
S 1917	Push Switch	CSG1111
S 1918	Push Switch	CSG1111
S 1919	Push Switch	CSG1111
LCD1901	LCD	CAW1704

RESISTORS

R 1901		RS1/16S222J
R 1902		RS1/16S222J
R 1903		RS1/16S274J
R 1904		RS1/16S103J
R 1905		RS1/16S121J
R 1906		RS1/16S2R2J
R 1907		RS1/16S101J
R 1908		RS1/16S101J
R 1918		RS1/16S271J
R 1920		RS1/16S271J
R 1922		RS1/16S271J
R 1924		RS1/16S271J
R 1926		RS1/16S271J
R 1928		RS1/16S271J
R 1934		RS1/16S104J
R 1935		RS1/16S103J
R 1936		RS1/16S223J
R 1937		RS1/16S271J
R 1939		RS1/16S271J

CAPACITORS

C 1901		CKSRYB104K25
C 1903		CSZSR4R7M16
C 1904		CKSRYB104K16
C 1905		CCSRCH101J50
C 1908		CKSRYB104K16
C 1909		CKSRYB104K16
C 1910		CKSRYB104K16
C 1911		CKSRYB104K16
C 1912		CKSRYB104K16
C 1913		CKSRYB104K16
C 1914		CKSRYB104K16
C 1915		CKSRYB104K16
C 1916		CKSRYB104K16
C 1917		CKSRYB104K16
C 1918		CKSRYB104K16
C 1919		CKSRYB104K16
C 1920		CKSRYB104K16
C 1921		CKSRYB104K16

Circuit Symbol and No.		Part No.
C 1922		CKSRYB104K16
C 1923		CKSRYB104K16

D

Unit Number:CWX2953
Unit Name:CD CORE UNIT(S10WMACODE2)

MISCELLANEOUS

IC 201	IC	UPD63761GJ
IC 203	IC	NJM2391DL1-33
IC 301	IC	BA5835FM
IC 501	IC	S-L2980A15MC-C6A
IC 701	IC	PE5423A
IC 703	IC	S-812C33AUA-C2N
Q 101	Transistor	2SB1132
Q 701	Transistor	UN2111
D 101	Diode	1SS355
L 203	Inductor	CTF1389
L 207	Inductor	CTF1389
L 209	Inductor	CTF1389
L 703	Inductor	CTF1389
L 902	Inductor	CTF1306
L 903	Inductor	CTF1306
L 904	Inductor	CTF1306
X 702	Resonator 4.00MHz	CSS1654
S 901	Switch(HOME)	CSN1051
S 902	Switch(CLAMP)	CSN1051
S 903	Spring Switch(DSCSNS)	CSN1052
S 904	Switch(12EJ)	CSN1051
S 905	Switch(8EJ)	CSN1051

RESISTORS

R 101	RS1/10S1R5J
R 102	RS1/10S1R5J
R 103	RS1/10S1R5J
R 104	RS1/10S1R5J
R 105	RS1/10S1R5J
R 107	RS1/16SS0R0J
R 201	RS1/16SS102J
R 202	RS1/16SS333J
R 205	RS1/16SS473J
R 207	RS1/16SS473J
R 209	RS1/16SS473J
R 210	RS1/16SS0R0J
R 214	RS1/16SS472J
R 216	RS1/16SS472J
R 218	RS1/16SS472J
R 220	RS1/16SS472J
R 221	RS1/16SS103J
R 222	RS1/16SS103J
R 223	RS1/16SS0R0J
R 224	RS1/16SS0R0J
R 225	RS1/16SS103J
R 226	RS1/16SS393J
R 227	RS1/16SS562J
R 228	RS1/16SS122J
R 229	RS1/16SS472J

Circuit Symbol and No.	Part No.
R 231	RS1/16SS0R0J
R 232	RS1/16SS122J
R 233	RS1/16SS0R0J
R 237	RS1/16SS221J
R 238	RS1/16SS221J
R 239	RS1/16SS221J
R 240	RS1/16SS0R0J
R 241	RS1/16SS333J
R 243	RS1/16SS333J
R 245	RS1/16SS333J
R 250	RS1/16SS0R0J
R 256	RS1/16SS0R0J
R 261	RS1/16S0R0J
R 262	RS1/16S0R0J
R 263	RS1/16S0R0J
R 264	RS1/16S0R0J
R 267	RS1/16S0R0J
R 301	RS1/16SS183J
R 302	RS1/16SS822J
R 304	RS1/16SS183J
R 305	RS1/16SS822J
R 307	RS1/16SS183J
R 308	RS1/16SS183J
R 309	RS1/16SS183J
R 310	RS1/16SS183J
R 501	RS1/16SS0R0J
R 701	RS1/16S0R0J
R 702	RS1/16SS0R0J
R 703	RS1/16SS104J
R 704	RS1/16SS104J
R 705	RS1/16SS221J
R 706	RS1/16SS221J
R 707	RS1/16SS0R0J
R 708	RS1/16SS221J
R 709	RS1/16SS473J
R 710	RS1/16SS102J
R 711	RS1/16SS102J
R 712	RS1/16SS102J
R 713	RS1/16SS102J
R 714	RS1/16SS473J
R 715	RS1/16SS101J
R 716	RS1/16SS472J
R 717	RS1/16SS221J
R 718	RS1/16SS221J
R 719	RS1/16SS221J
R 720	RS1/16SS471J
R 721	RS1/16S0R0J
R 724	RS1/16S473J
R 725	RS1/16SS222J
R 726	RS1/16SS103J
R 727	RS1/16SS473J
R 729	RS1/16SS223J
R 730	RS1/16SS473J
R 731	RS1/16SS104J
R 732	RS1/16SS104J
R 733	RS1/16SS104J
R 735	RS1/16SS473J
R 737	RS1/16SS104J
R 740	RS1/16SS473J
R 743	RS1/16SS104J

Circuit Symbol and No.		Part No.
R 745		RS1/16SS473J
R 746		RS1/16SS104J
R 747		RS1/16SS102J
R 750		RS1/16SS473J
R 751		RS1/16SS102J
R 754		RS1/16SS102J
R 755		RS1/16SS102J
R 756		RS1/16SS104J
R 765		RAB4CQ221J
R 769		RAB4CQ221J
R 773		RAB4CQ221J
R 777		RS1/16SS221J
R 778		RS1/16SS221J
R 779		RS1/16SS221J
R 901		RAB4CQ221J
R 902		RS1/16S0R0J
R 905		RS1/16SS221J
R 906		RS1/16SS221J
R 909		RS1/16SS0R0J
R 911		RS1/16SS0R0J

CAPACITORS

C 101		CKSSYB104K10
C 102		CKSSYB104K10
C 103	100µF/16V	CCH1504
C 104	47µF/6.3V	CCH1506
C 105		CKSSYB104K10
C 106		CCSSCH101J50
C 107		CKSRYB224K16
C 108		CKSSYB104K10
C 110		CKSSYB104K10
C 201		CKSSYB471K50
C 202		CKSSYB104K10
C 203		CKSSYB104K10
C 205		CKSSYB104K10
C 207	220µF/4V	CCH1590
C 208		CKSSYB104K10
C 209		CKSSYB104K10
C 216		CKSSYB332K50
C 217		CKSSYB104K10
C 218		CKSSYB223K16
C 219		CKSSYB104K10
C 220		CKSSYB103K16
C 221		CKSSYB104K10
C 222		CCSSCH560J50
C 223		CCSSCH5R0C50
C 224		CKSSYB104K10
C 225		CKSSYB103K16
C 226		CCSSCH680J50
C 227		CCSSCH470J50
C 228		CKSSYB682K25
C 230		CKSSYB104K10
C 232		CKSSYB104K10
C 233	10µF/6.3V	CCH1470
C 234	220µF/4V	CCH1590
C 235		CKSRYB224K16
C 237		CKSSYB104K10
C 239		CCSSCH330J50
C 242		CKSSYB104K10
C 246		CKSSYB104K10

Circuit Symbol and No.		Part No.
C 249		CKSSYB221K50
C 250		CKSRYB102K50
C 251		CKSRYB102K50
C 260		CKSSYB104K10
C 301		CKSSYB221K50
C 302		CKSSYB221K50
C 303		CKSSYB472K25
C 304		CKSSYB103K16
C 305	100µF/16V	CCH1504
C 306		CKSSYB104K10
C 307		CKSSYB104K10
C 501		CKSRYB224K16
C 505		CKSQYB475K6R3
C 701		CKSSYB104K10
C 702		CKSSYB471K50
C 703		CKSSYB103K16
C 704	4.7µF/25V	CCH1592
C 706		CKSSYB104K10
C 707		CKSSYB104K10
C 712		CKSRYB224K16
C 713		CKSSYB104K10
C 714		CKSSYB104K10
C 716		CKSSYB103K16
C 717		CCSSCH180J50
C 718		CCSSCH180J50
C 720		CKSQYB225K10
C 722		CKSRYB105K10
C 903		CKSSYB471K50
C 906		CKSRYB224K16
C 910		CKSQYB225K10

E

Unit Number:
Unit Name:Switch PCB

MISCELLANEOUS

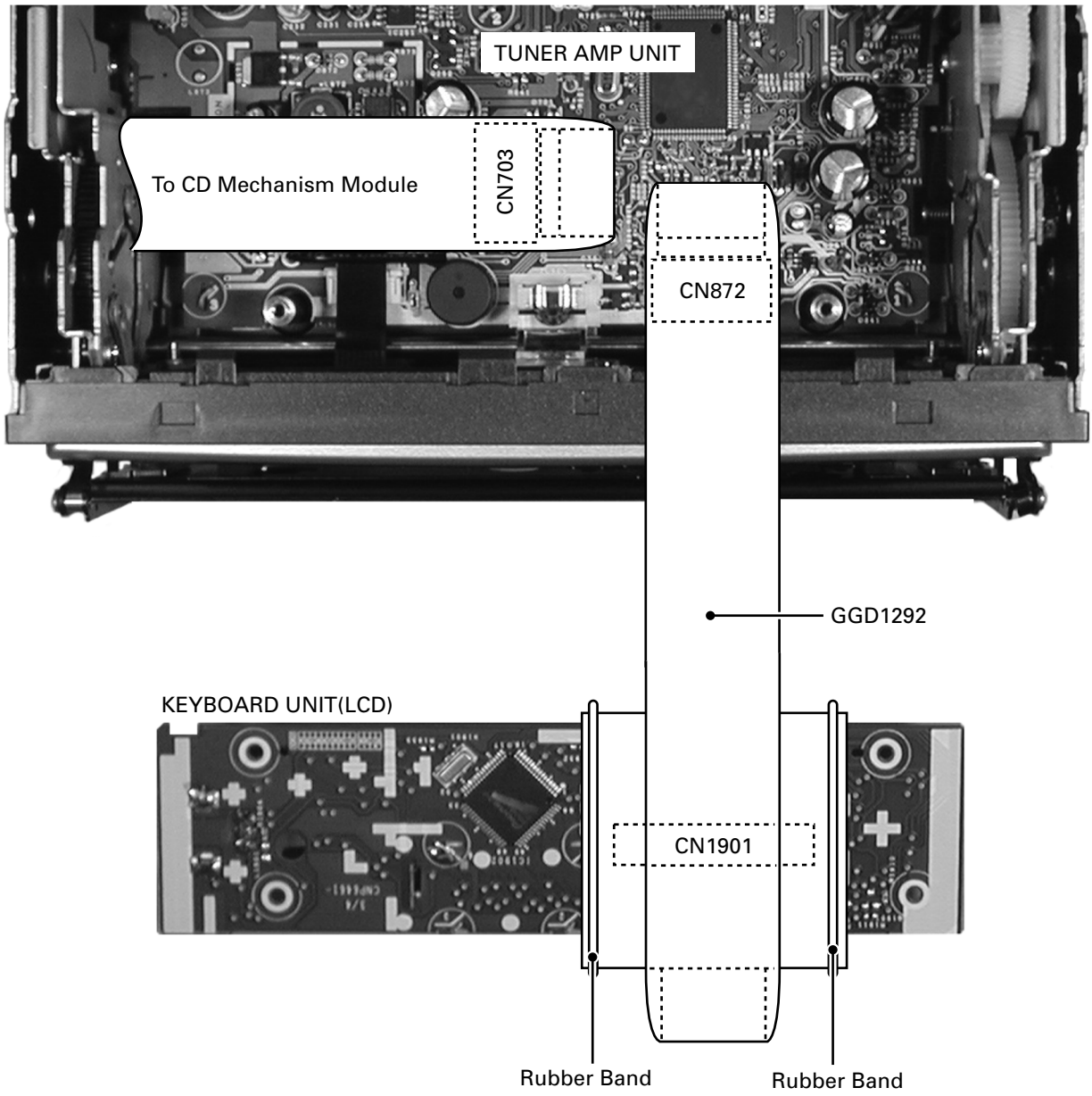
S 951	Switch(OPEN)	CSN1051
S 952	Switch(CLOSE)	CSN1052
S 953	Switch(EJECT)	CSN1058

Miscellaneous Parts List

	Pickup Unit(P10)(Service)	CXX1641
M 1	Motor Unit(SPINDLE)	CXB6007
M 2	Motor Unit(LOADING/CARRIAGE)	CXB8933
M 951	Motor Unit(AUTOMATIC FLAP)	CXC3190

6. ADJUSTMENT

6.1 JIG CONNECTION DIAGRAM



6.2 CD ADJUSTMENT

1) Cautions on adjustments

• In this product the single voltage (3.3V) is used for the regulator. The reference voltage is the REFO1 (1.65V) instead of the GND.
If you should mistakenly short the REFO1 with the GND during adjustment, accurate voltage will not be obtained, and the servo's misoperation will apply excessive shock to the pickup. To avoid such problems:
a. Do not mix up the REFO1 with the GND when connecting the (-) probe of measuring instruments. Especially on an oscilloscope, avoid connecting the (-) probe for CH1 to the GND.
b. In many cases, measuring instruments have the same potential as that for the (-) probe. Be sure to set the measuring instruments to the floating state.
c. If you have mistakenly connected the REFO1 to the GND, turn off the regulator or the power immediately.

• Before mounting and removing filters or leads for adjustment, be sure to turn off the regulator.

• For stable circuit operation, keep the mechanism operating for about one minute or more after the regulator is turned on.

• In the test mode, any software protections will not work. Avoid applying any mechanical or electrical shock to the mechanism during adjustment.

• The RFI and RFO signals with a wide frequency range are easy to oscillate. When observing the signals, insert a resistor of 1k ohms in series.

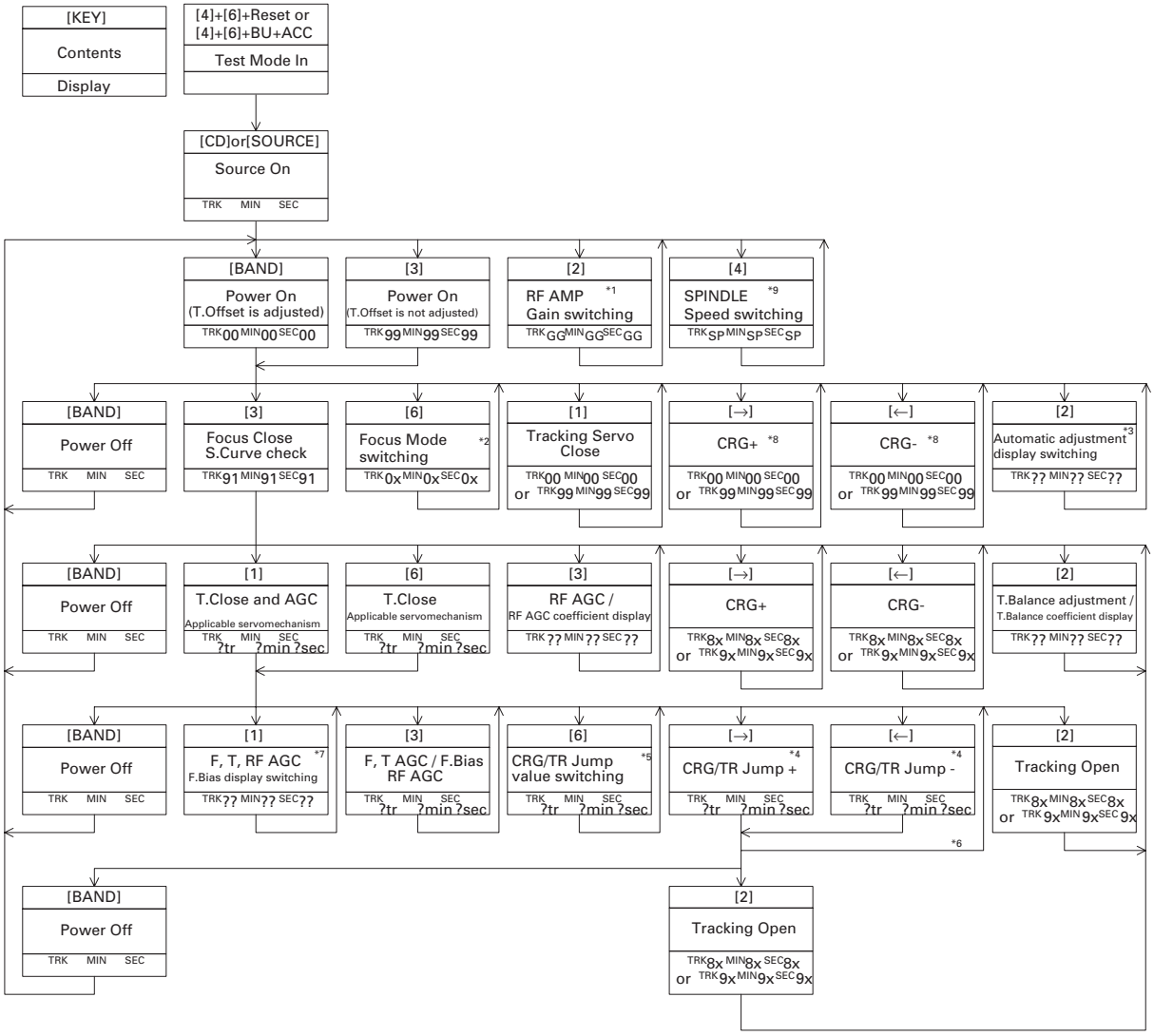
• The load and eject operation is not guarantied with the mechanism upside down. If the mechanism is blocked due to mistaken eject operation, reset the product or turn off and on the ACC to restore it.

2) Test mode

This mode is used to adjust the CD mechanism module.
• To enter the test mode.
While pressing the 4 and 6 keys at the same time, reset.
• To exit from the test mode.
Turn off the ACC and back up.

Notes:
a. During ejection, do not press any other keys than the EJECT key until the loaded disc is ejected.
b. If you have pressed the (→) key or (←) key during focus search, turn off the power immediately to protect the actuator from damage caused by the lens stuck.
c. For the TR jump modes except 100TR, the track jump operation will continue even if the key is released.
d. For the CRG move and 100TR jump modes, the tracking loop will be closed at the same time when the key is released.
e. When the power is turned off and on, the jump mode is reset to the single TR (91), the RF amp gain is set to 0dB, and the auto-adjustment values are reset to the default settings.

● Flow Chart



*1) TYP (TRK MIN SEC) → -6dB (TRK 06 MIN 06 SEC 06) → -12dB (TRK 12 MIN 12 SEC 12)

*2) Focus Close (TRK 00 MIN 00 SEC 00 / TRK 99 MIN 99 SEC 99) → S.Curve ckeck setting (TRK 01 MIN 01 SEC 01) → F EQ measurement setting (TRK 02 MIN 02 SEC 02)

*3) F.Offset Display → T.Offset Display → Switch to the order of the original display

*4) 1TR / 32TR / 100TR

*5) Single TR → 32TR → 100TR → CRG Move
9x(8x) : 91(81) 92(82) 93(83) 94(84)

*6) Only at the time of CRG Move, 100TR Jump

*7) TRK/MIN/SEC → F.AGC → T.AGC → F.Bias → RF AGC

*8) CRG motor voltage = 2[V]

*9) TYP(1X) (TRK MIN SEC) → 2X (TRK 22 MIN 22 SEC 22) → 1X (TRK 11 MIN 11 SEC 11)

As for the double speed (2x), audio output cannot be supported.

TYP(2X) (TRK MIN SEC) → 1X (TRK 11 MIN 11 SEC 11) → 2X (TRK 22 MIN 22 SEC 22)

[Key]	Operation Test Mode
[BAND]	Power On/Off
[→]	CRG + / TR Jump + (Direction of the external surface)
[←]	CRG - / TR Jump - (Direction of the internal surface)
[1]	T.CLS and AGC and Applicable servomechanism / AGC, AGC display switching
[2]	RF Gain switching / Offset adjustment display / T.Balance adjustment / T.Open
[3]	F.Close, S.Curve / Rough Servo and RF AGC / F, T, RF AGC
[4]	SPDL 1X/2X switching As for the double speed (2x), audio output cannot be supported.
[5]	Error Rate measurement 1st-ON : ERR count beginning(30Sec) 2nd-ON : BER display data[%]
[6]	F. Mode switching / Tracking Close / CRG, TR Jump switching

6.3 CHECKING THE GRATING AFTER CHANGING THE PICKUP UNIT

• **Note :**
The grating angle of the PU unit cannot be adjusted after the PU unit is changed. The PU unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted PU unit for the CD mechanism module. Changing the PU unit is thus best considered as a last resort. However, if the PU unit must be changed, the grating should be checked using the procedure below.

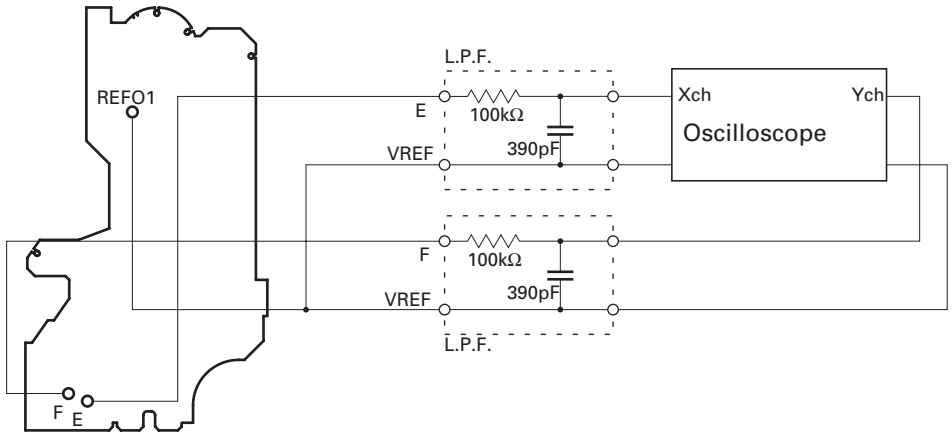
• **Purpose :**
To check that the grating is within an acceptable range when the PU unit is changed.

• **Symptoms of Mal-adjustment :**
If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or taking a long time for track searching.

• **Method :**

• Measuring Equipment	• Oscilloscope, Two L.P.F.
• Measuring Points	• E, F, REFO1
• Disc	• ABEX TCD-782
• Mode	• TEST MODE

CD CORE UNIT(S10WMACODE2)



• **Checking Procedure**
1. In test mode, load the disc and switch the 3V regulator on.
2. Using the → and ← buttons, move the PU unit to the innermost track.
3. Press key 3 to close focus, the display should read "91". Press key 2 to implement the tracking balance adjustment the display should now read "81". Press key 3. The display will change, returning to "81" on the fourth press.
4. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75° . Refer to the photographs supplied to determine the phase angle.
5. If the phase difference is determined to be greater than 75° try changing the PU unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75° then the mechanism should be judged to be at fault.

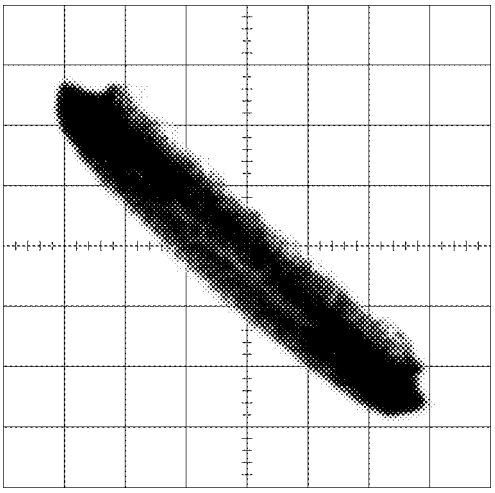
• **Note**
Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

• **Hint**
Reloading the disc changes the clamp position and may decrease the "wobble".

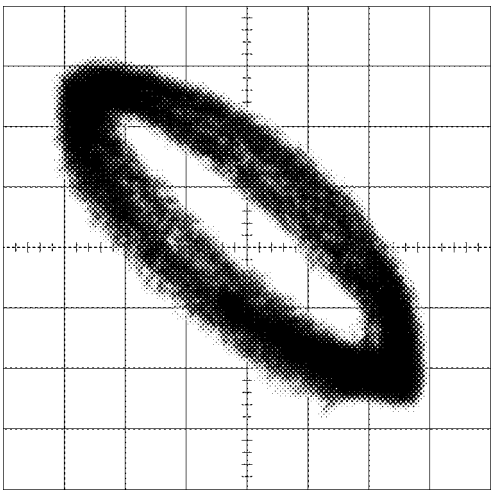
Grating waveform

Ech → Xch 20mV/div, AC
Fch → Ych 20mV/div, AC

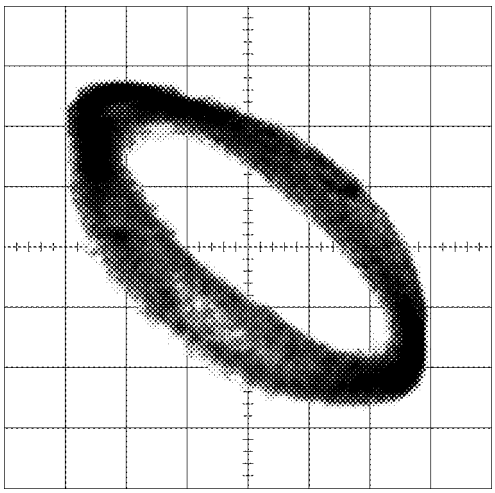
0°



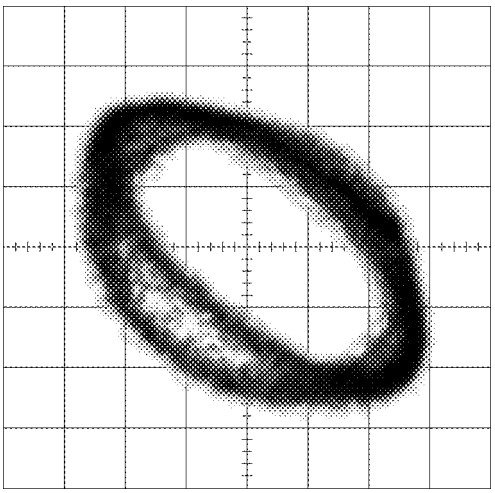
30°



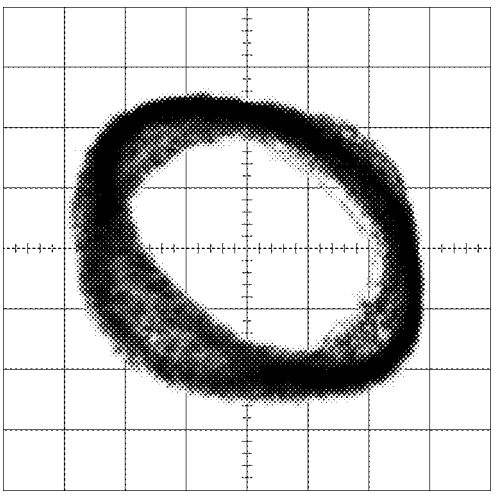
45°



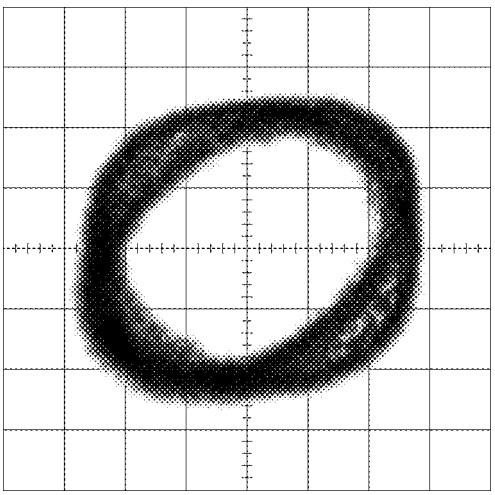
60°



75°



90°



6.4 ERROR MODE

● Error Messages

If a CD is not operative or stopped during operation due to an error, the error mode is turned on and cause(s) of the error is indicated with a corresponding number. This arrangement is intended at reducing nonsense calls from the users and also for facilitating trouble analysis and repair work in servicing.

(1) Basic Indication Method

1) When SERRORM is selected for the CSMOD (CD mode area for the system), error codes are written to DMIN (minutes display area) and DSEC (seconds display area). The same data is written to DMIN and DSEC. DTNO remains in blank as before.

2) Head unit display examples

Depending on display capability of LCD used, display will vary as shown below. xx contains the error number.

8-digit display	6-digit display	4-digit display
ERROR–xx	ERR–xx	E–xx

(2) Error Code List

Code	Class	Displayed error code	Description of the code and potential cause(s)
10	Electricity	Carriage Home NG SERVO LSI Communication Error	CRG can't be moved to inner diameter. CRG can't be moved from inner diameter. → Failure on home switch or CRG move mechanism. Communication error between microcomputer and SERVO LSI.
11	Electricity	Focus Servo NG	Focusing not available. → Stains on rear side of disc or excessive vibrations on REWRITABLE.
12	Electricity	Spindle Lock NG Subcode NG	Spindle not locked. Sub-code is strange (not readable). → Failure on spindle, stains or damages on disc, or excessive vibrations. A disc not containing CD-R data is found. Turned over disc are found, though rarely. CD signal error.
17	Electricity	Setup NG	AGC protection doesn't work. Focus can be easily lost. → Damages or stains on disc, or excessive vibrations on REWRITABLE.
30	Electricity	Search Time Out	Failed to reach target address. → CRG tracking error or damages on disc.
44	Electricity	ALL Skip	Skip setting for all track. (CD-R/RW)
50	Mechanism	CD On Mech Error	Mechanical error during CD ON. → Defective loading motor, mechanical lock and mechanical sensor.
A0	System	Power Supply NG	Power (VD) is ground faulted. → Failure on SW transistor or power supply (failure on connector).

Remarks: Mechanical errors are not displayed (because a CD is turned off in these errors).

Unreadable TOC does not constitute an error. An intended operation continues in this case.

Upper digits of an error code are subdivided as shown below:

1x: Setup relevant errors, 3x: Search relevant errors, Ax: Other errors.

6.5 FREQUENCY CHECK FOR CLOCK

● PCL output

In the normal operation mode (with the detachable panel installed, the ACC switched ON, the standby mode cancelled), shift the TESTIN (Pin 88) terminal to H.
The clock signal is output from the PCL terminal (Pin 39).
The frequency of the clock signal is 468.5kHz that is one 32th of the fundamental frequency.
The clock signal should be 468.75kHz±19Hz.
If the clock signal is out of the range, the X'tal (X601) should be replaced with new one.

6.6 OEL SCREENSAVER STUDIO IKA TO LKD APPLICATION :GGV1168

"OEL Screensaver Studio" is an application to create OEL display image file. The customer write the image file on a CD-R disc and install it to car audio. This function is similar to PC link-kit (CD-PC1).
"OEL Screensaver Studio" is available to the public on the PIONEER Home Page.
This software (GGV1168) is added LKA to LKD file conversion function to original "OEL Screensaver Studio".

● How to check:

1. Set up GGV1168 application.
2. Confirm the LKA file (ent_disp.lka) is converted to LKD file correctly or not.

Please see a Readme.txt in the GGV1168 or help file of "OEL Screensaver Studio" for more information.

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 DISASSEMBLY

● **Removing the Case Unit (Fig.1)**

1 Remove the screw and then remove the Case Unit.

*) Release the latches in order of the number indicated in Fig.1.

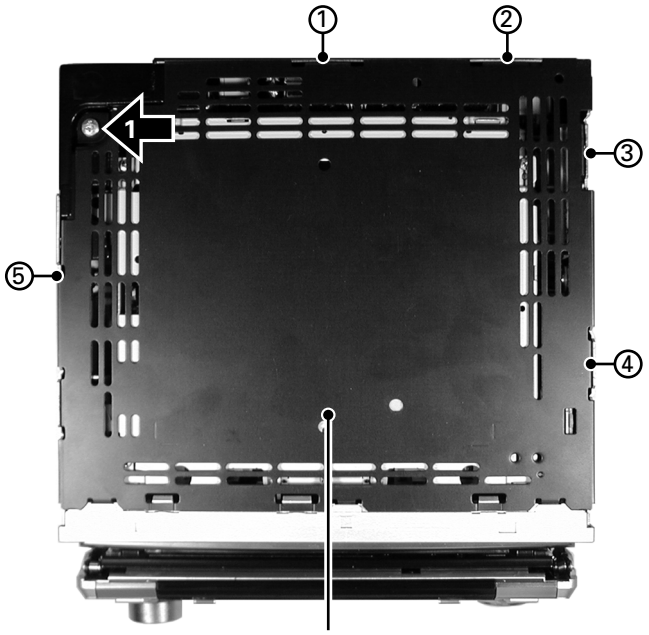


Fig.1

● **Removing the CD Mechanism Module (Fig.2)**

1 Remove the four screws.

Disconnect the connector and then remove the CD Mechanism Module.

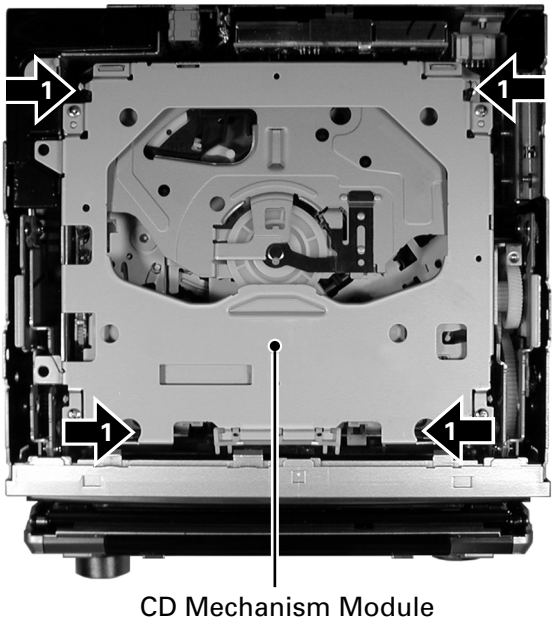


Fig.2

● Moving the Arm Unit position (Fig.3)

Use the finger. Rotate the gear in the direction indicated by arrow in Fig.3 until the Arm Unit moves to the 3 positions of a Fig.3.

*) There is a possibility of bending if load is added to the arm parts, It becomes the cause of defect of move of the grille parts. When you place a product, please go in the CLOSE POSITION.

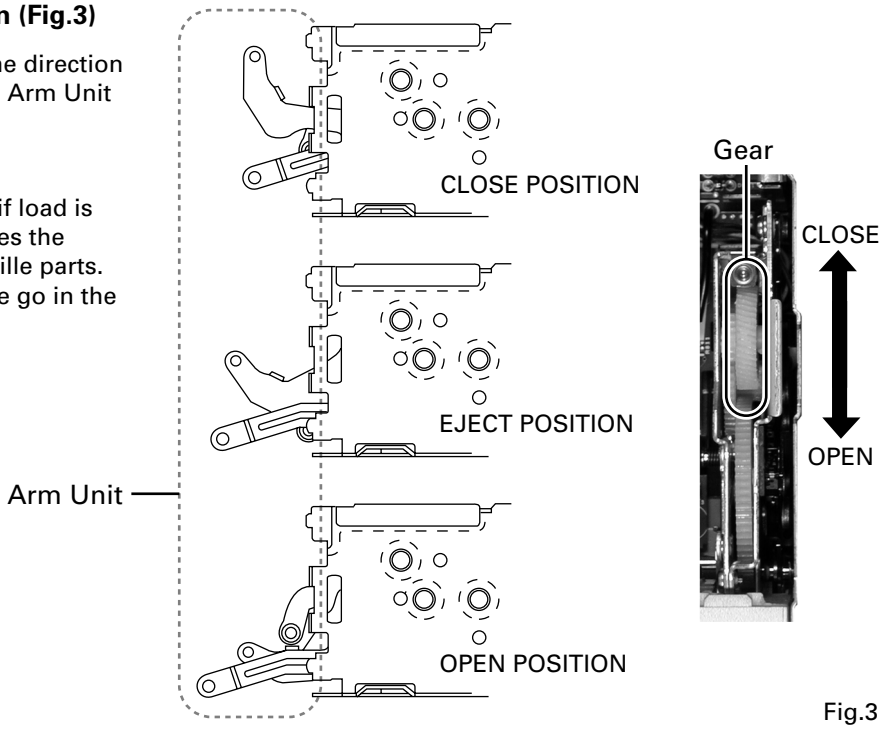


Fig.3

● Removing the Detach Grille Assy and Grille Assy

Move the Arm Unit to the OPEN POSITION. (Fig.3)

1 Remove the two screws. (Fig.4)

Disconnect the connector and then remove the Detach Grille Assy.

*) When installing the screws, please make sure that the spring is also installed.

2 Remove the two screws. (Fig.4)

Move the Arm Unit to the EJECT POSITION. (Fig.3)

Disconnect the connector and then remove the Grille Assy.

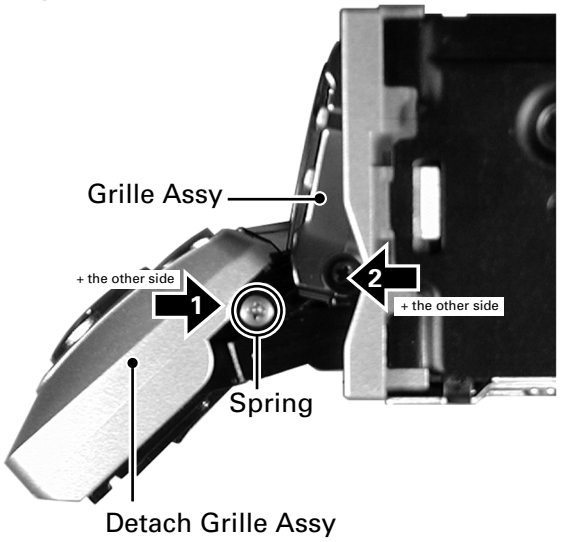


Fig.4

● Removing the Panel Unit

Move the Arm Unit to the OPEN POSITION. (Fig.3)

1 Remove the two screws and then remove the Panel Unit. (Fig.5)

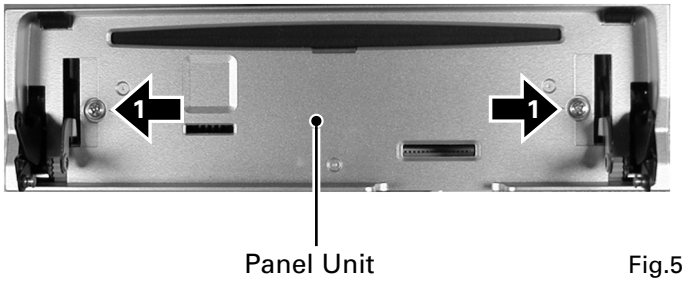


Fig.5

● Removing the Gear Unit

Move the Arm Unit to the CLOSE POSITION. (Fig.3)

1 Remove the four screws and then remove the Gear Unit. (Fig.6)

*) When you remove or intall the Gear Unit, do so with the Arm Unit in the CLOSE POSITION.

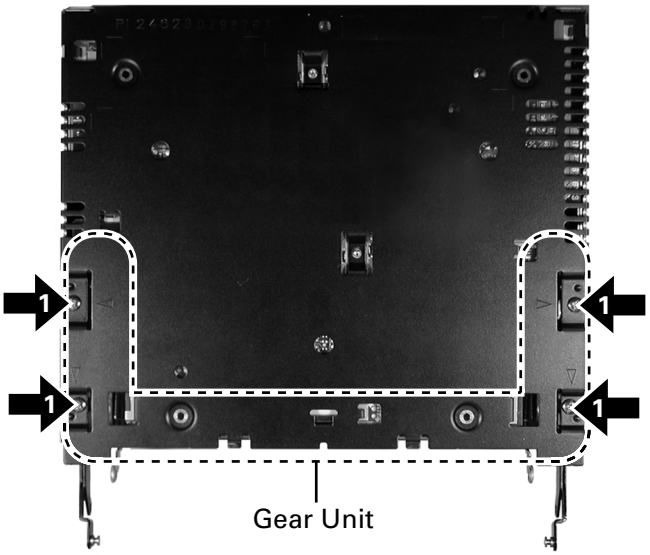
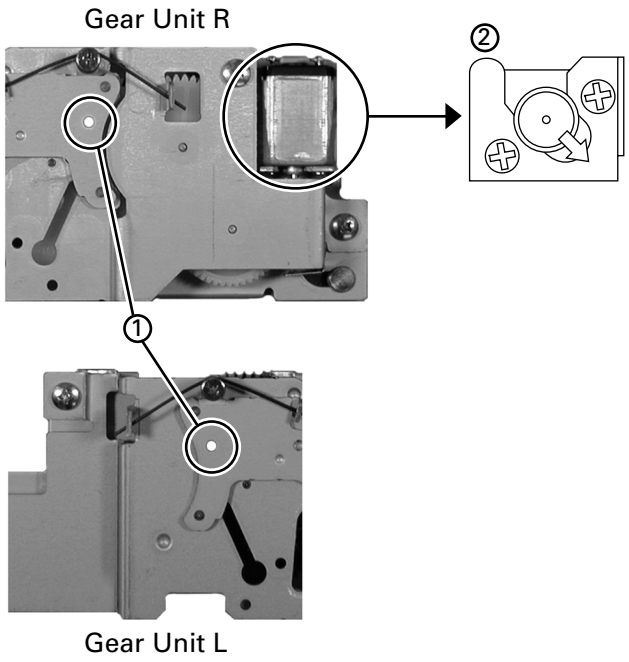


Fig.6

● Checkpoints for the Gear Unit

1. When you disassemble or assemble the Gear Unit, do so with the Arm Unit in the CLOSE POSITION.
   Make sure that the Arm Unit is in the CLOSE POSITION by seeing the other side of the unit through the fully circular hole shown in the figure.

2. When you install the motor, fix the screws holding the motor in the direction of the arrow shown in the figure.



● Removing the Tuner Amp Unit (Fig.7)

There are two ways of removing the Tuner Amp Unit.
One is to remove the Gear Unit (Fig.6), then Tuner Amp Unit, and the other is to remove the Panel Unit (Fig.5), then Tuner Amp Unit.

1. Remove the three screws.
2. Remove the screw.
3. Remove the two screws.
4. Straighten the tabs at two locations indicated.
5. Remove the two screws and then remove the Tuner Amp Unit.

*) The Tuner Amp Unit may appear slightly different to the unit shown at right.

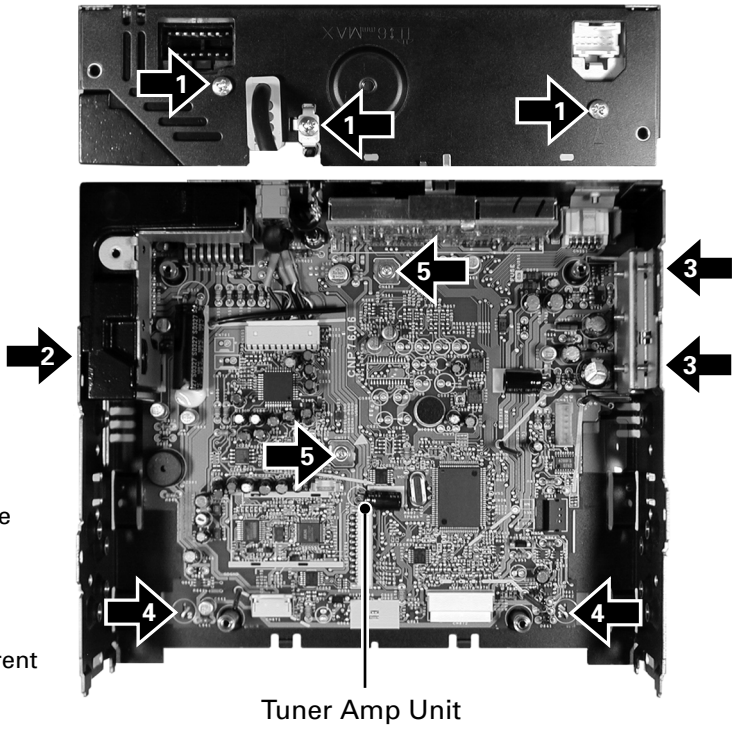
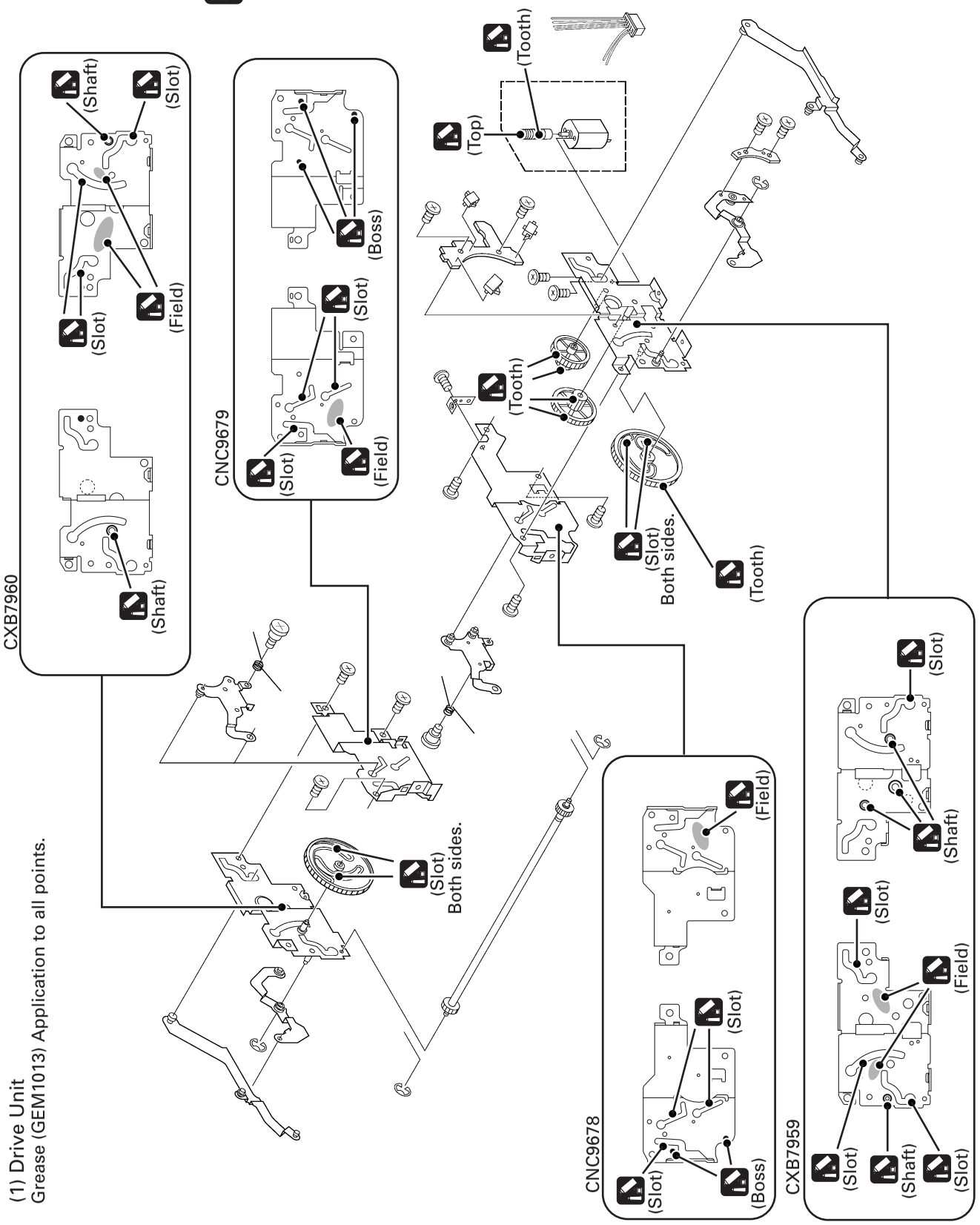


Fig.7

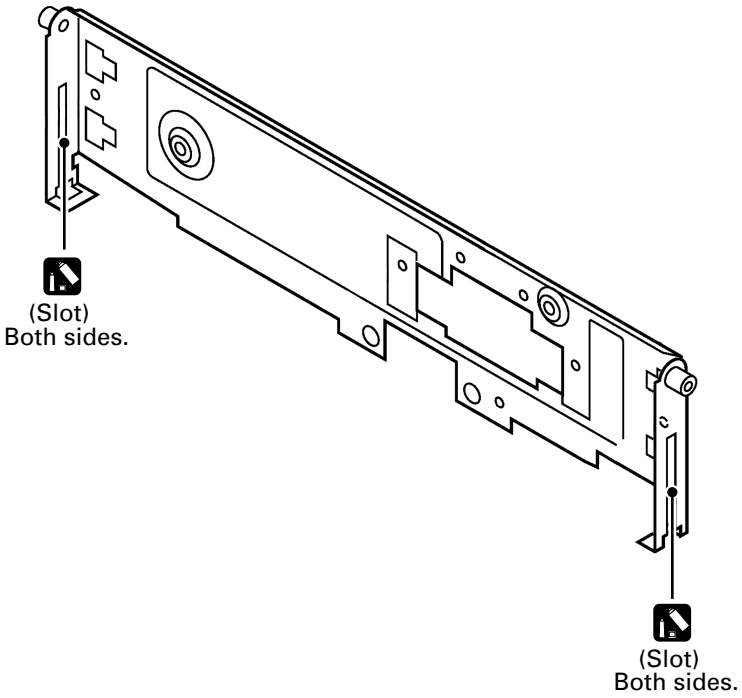
● Lubricants Points



(1) Drive Unit
Grease (GEM1013) Application to all points.

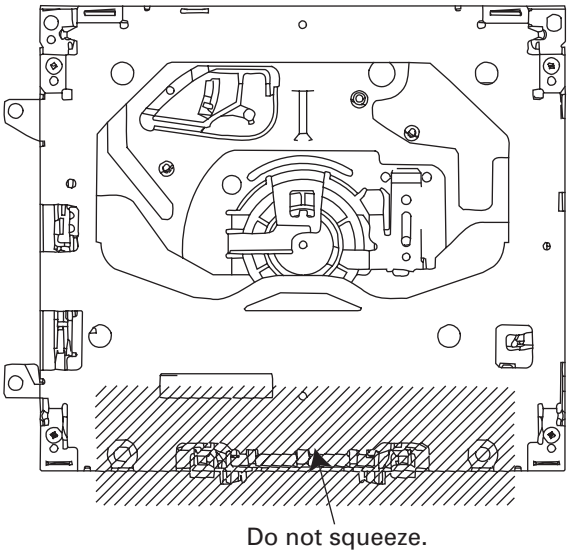
(2) Case Unit (CXC2406)

Lubricants (GEM1056) Application to all points.



● How to hold the Mechanism Unit

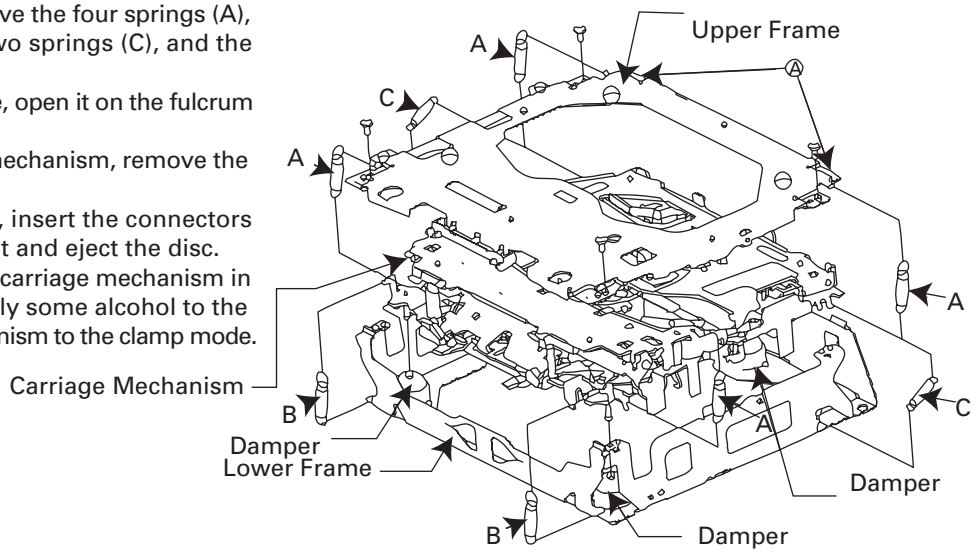
1. Hold the top and bottom frame.
2. Do not squeeze top frame's front portion too tight, because it is fragile.



● Removing the Upper and Lower Frames

1. With a disc clamped, remove the four springs (A), the two springs (B), the two springs (C), and the four screws.
2. To remove the upper frame, open it on the fulcrum A.
3. While lifting the carriage mechanism, remove the three dampers.
4. With the frames removed, insert the connectors coming from the main unit and eject the disc.

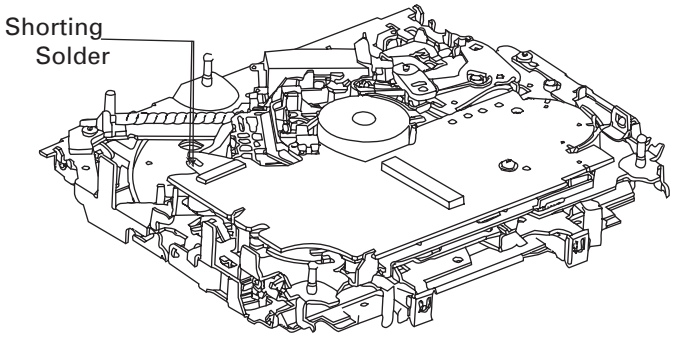
Caution: Before installing the carriage mechanism in the frames, be sure to apply some alcohol to the dampers and set the mechanism to the clamp mode.

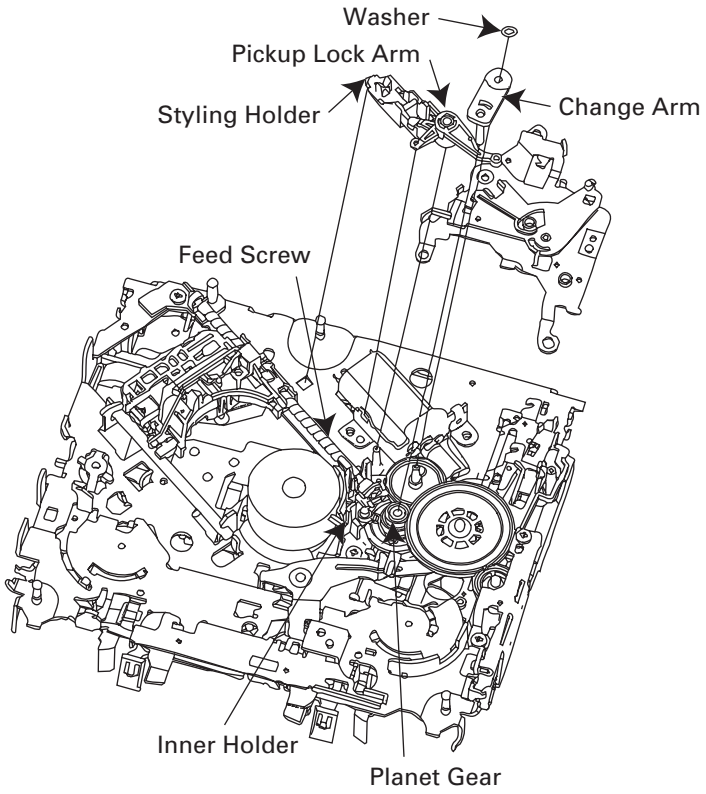


● Removing the Pickup Unit

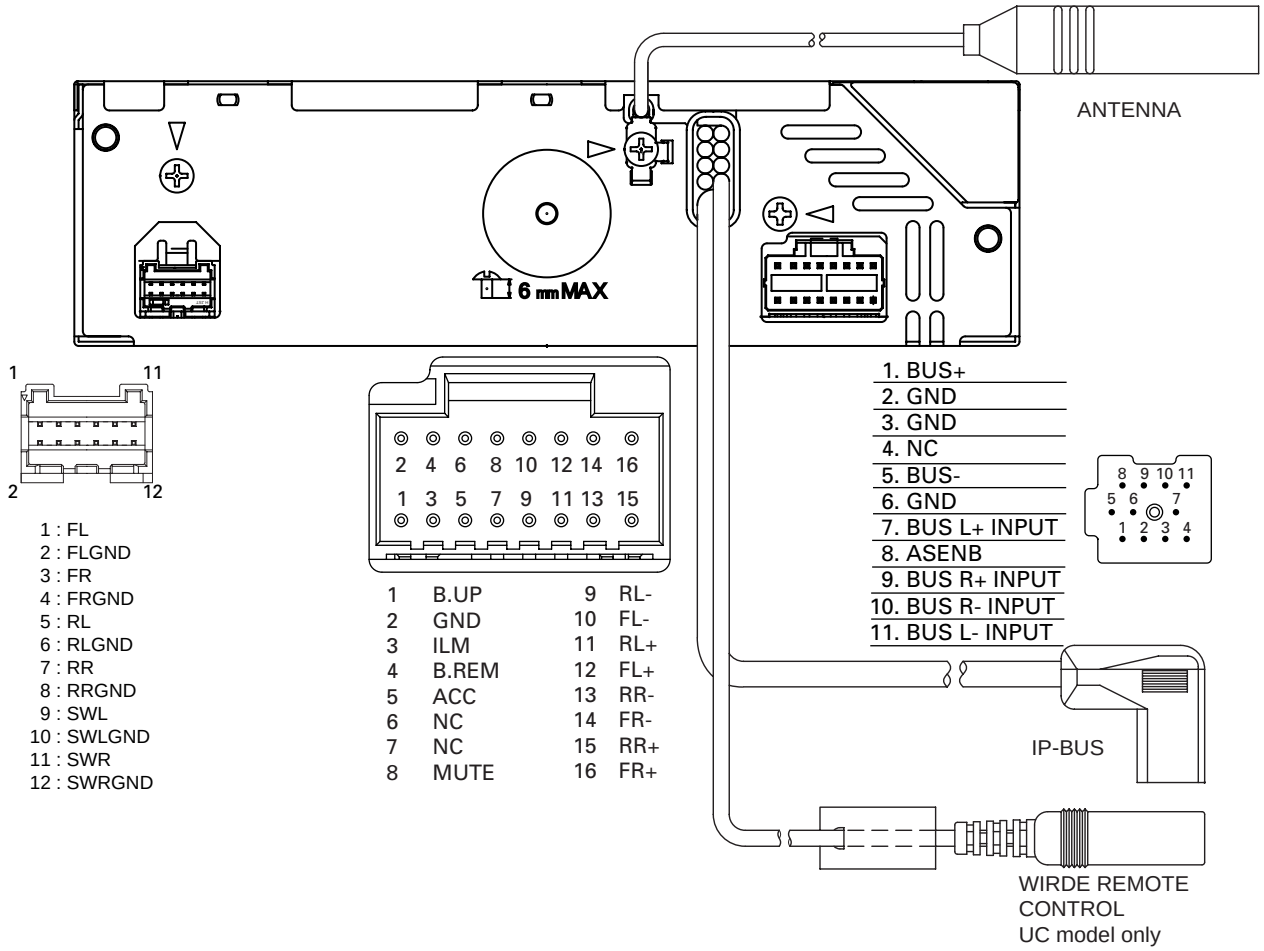
1. Apply shorting solder to the Pickup flexible cable. Disconnect the cable.
2. Set the mechanism to the clamp mode.
3. Remove the lead wires from the inner holder.
4. Remove the washer, styling holder, change arm, and pickup lock arm.
5. While releasing from the hook of the inner holder, lift the end of the feed screw.

Caution: In assembling, move the planet gear to the load/eject position before setting the feed screw in the inner holder.





7.1.2 CONNECTOR FUNCTION DESCRIPTION



7.2 PARTS

7.2.1 IC

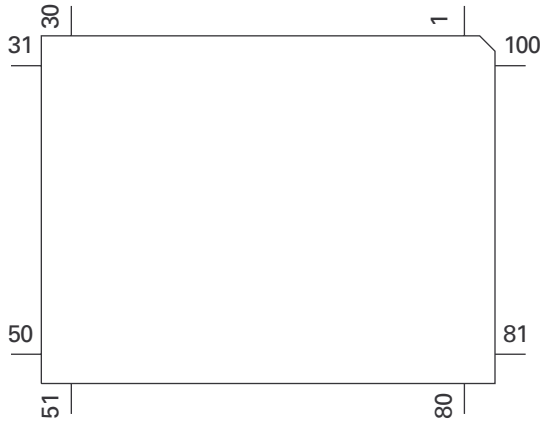
PD5914A	TC7WH32FK	PE5423A
PD5915A	PD5917A	S-812C33AUA-C2N
BD4835G	PD6340A	S-L2980A15MC-C6A
PCM1606EG	PD8122A	BA5835FM
AK7730VT	PD6460A	
HA12240FP	UPD63761GJ	

● Pin Functions(PD5914A,PD5915A)

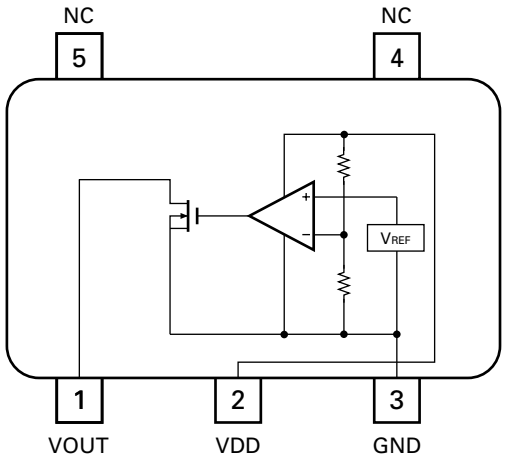
Pin No.	Pin Name	I/O	Function and Operation
1	BSO	O	P-BUS data output
2	$\overline{\text{BSCK}}$	I/O	P-BUS clock input/output
3	DUALILM	O	LCD illumination select output
4	CSENSOUT	O	CDS eject sense output
5	DSPOUT	O	DSP output
6	DSPIN	I	DSP input
7	DSPCK	O	DSP clock output
8	BYTE		VSS
9	CNVSS		VSS
10	TELIN	I	TEL mute input
11	FLPPW	O	Auto flap motor control output
12	RESET	I	Reset input
13	XOUT	O	Crystal oscillating element connection output
14	VSS		GND
15	XIN	I	Crystal oscillating element connection input
16	VCC1		Power supply
17	NMI		(Pull up)
18,19	NC		Not used
20	DALMON	O	For consumption low-current output
21	IPBUSIN2	I	IP-BUS input
22	OELPW	O	OEL power supply control output
23	SYSPW	O	System power output
24	PEE	O	PEE output
25	NC		Not used
26	ROMCS	O	ROM collection chip select output
27	ROMCK	O	ROM collection clock output
28	ROMDATA	I/O	ROM collection data input/output
29	IPBUSIN	I	IP-BUS input
30	IPBUSOUT	O	IP-BUS output
31	DPDT1	O	OEL display microcomputer communicator data output
32	KYDT1	I	OEL display microcomputer communicator data input
33,34	NC		Not used
35	DPDT2	O	LCD display microcomputer communicator data output
36	KYDT2	I	LCD display microcomputer communicator data input
37,38	ROT1, 0	I	Rotary encoder input
39	PCL	O	Clock adjustment output
40	SWVDD1	O	OEL display microcomputer power output
41	DISPPW	O	LCD power supply control output
42	ILMPW 1	O	OEL illumination power output
43	ILMPW 2	O	LCD illumination power output
44	$\overline{\text{DSPPW}}$	O	DSP power output

Pin No.	Pin Name	I/O	Function and Operation
45	DSPMOD	I	DSP mode inptut
46,47	NC		Not used
48,49	GDTC2,1	O	GDTC output
50	INTI_RESET	O	Initialize reset output
51	S_RESET	O	S reset output
52	DSP_RQ	O	DSP request output
53	DSP_DRDT	I	DSP data ready input
54	DSP_RDY	I	DSP IF ready/Busy input
55	PDO	O	PLL data output
56	PDI	I	PLL data input
57	PCK	O	PLL clock output
58	EMPOUT	O	Emphasis information output
59	BRXEN	I/O	P-BUS communication input/output
60	BRST	O	P-BUS reset output
61	LRCKOK	I	LRCK OK input
62	VCC		Power supply
63	MCKRQ	I	Master clock request input
64	VSS		GND
65	FLPCLS	O	Auto flap close output
66	FLPOPN	O	Auto flap open output
67	$\overline{\text{FLPEJSW}}$	I	Auto flap eject sense input
68	$\overline{\text{FOPNSW}}$	I	Auto flap open sense input
69	$\overline{\text{FCLSSW}}$	I	Auto flap close sense input
70	FLPILM	O	Disc loading slot illumination output
71	$\overline{\text{PCE2}}$	I	PLL chip enable input
72	PCE	I	PLL chip enable input
73	$\overline{\text{BSENS}}$	I	Back up sense input
74	$\overline{\text{ASENS}}$	I	ACC sense input
75	NC		Not used
76	DSP_CS	O	DSP chip select intput
77	EVOL_CS	O	EVOL chip select intput
78	NC		Not used
79	SWVDD2	O	LCD display microcomputer power supply output
80	SMODE	O	S-MODE output
81	IPPW	O	IP-BUS driver power supply control output
82	ASENBO	O	ACC sense output
83	$\overline{\text{ISENS}}$	I	Illumination sense input
84	DIMMER	O	LCD dimmer output
85	$\overline{\text{BSRQ}}$	I	P-BUS communication request input
86	NC		Not used
87	MUTE	O	Mute output
88	TESTIN	I	Test program input
89	EMPIN	I	Emphasis information input
90	ASLIN	I	ASL input
91,92	NC		Not used
93	KEYD	I	Key data input
94	DSENS	I	Detach sense input
95	KEYAD	I	Remote control key input
96	AVSS		A/D converter power supply input
97	SL	I	Tuner signal level input
98	VREF		A/D converter reference voltage
99	AVCC		A/D converter power supply input
100	BSI	I	P-BUS data input

*PD5914A:UC model,
*PD5915A:ES model

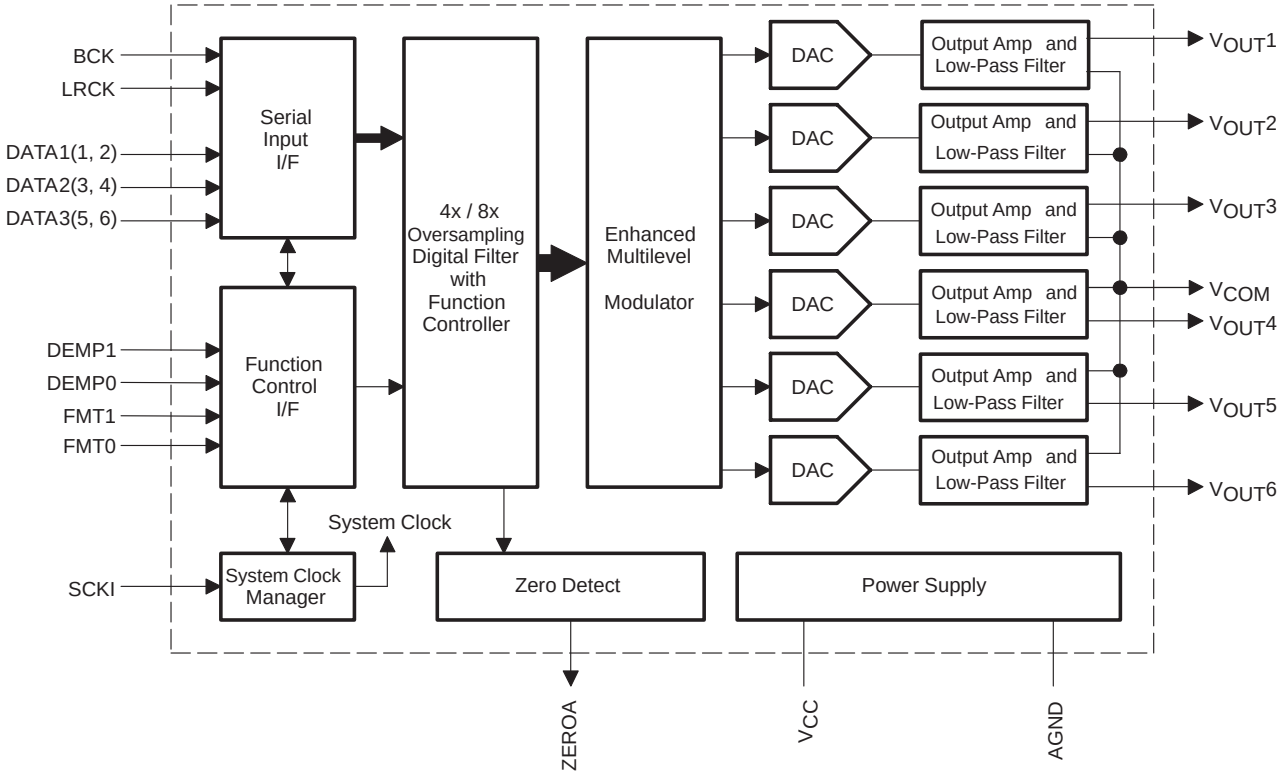


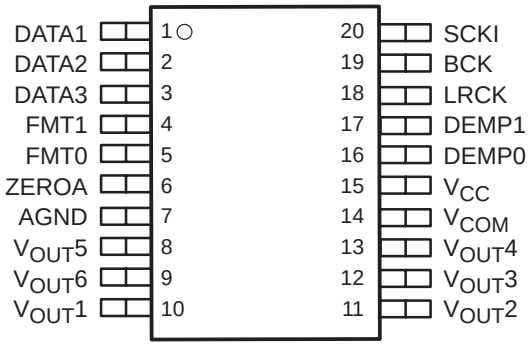
BD4835G



IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

*PCM1606EG

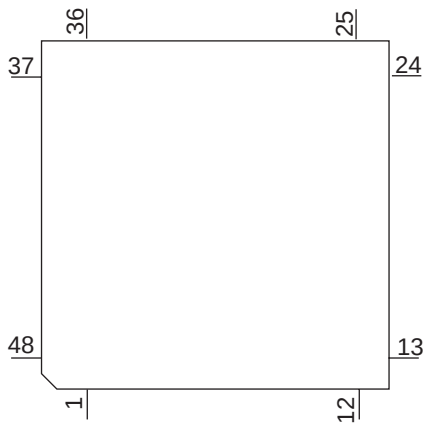




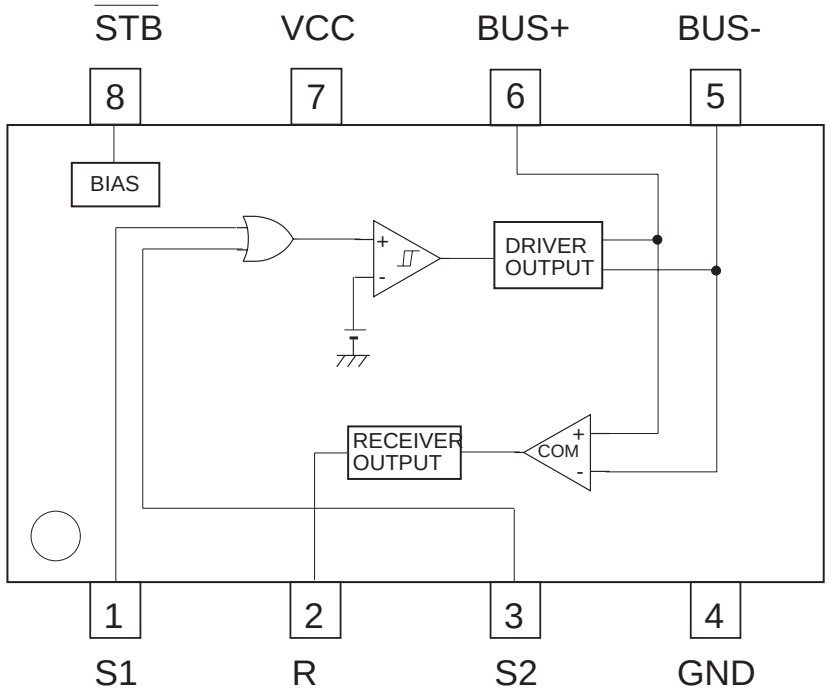
● Pin Functions(AK7730VT)

Pin No.	Pin Name	I/O	Function and Operation
1	EESEL	I	Control Mode select pin (Pull down)
2	JX0/SDIN4A	I	External conditional jump pin / DSP serial data input pin (Pull down)
3, 4	SDIN3, 2/JX1, 2	I	DSP serial data input pin / External condition jump pin (Pull down)
5	SDIN1	I	DSP serial data input pin (Pull down)
6	CKS1	I	Master clock (XTI) select pin (Pull down)
7	BVSS		Silicon substrate potential 0V
8	DVSS		Ground pin for digital section 0.0V
9	DVDD		Power supply pin for digital section 3.3V (typ)
10-13	SDOUT4-1	O	DSP Serial data output pin
14	BITCLK_I	I	Serial bit clock input pin
15	LRCLK_I	I	LR channel select clock input pin
16	BITCLK_O	O	Serial bit clock output pin
17	LRCLK_O	O	LR channel select clock output pin
18	RDY	O	Data write ready output pin for microcomputer interface
19	DRDY	O	Output data ready pin for Microcomputer interface
20	$\overline{CS}$	I	Chip select pin for Microcomputer interface (pull down)
21	DVDD		Power supply pin for digital section 3.3V (typ)
22	DVSS		Ground pin for digital section 0V
23, 24	CLKO1, 2	O	Clock output pin
25	XTO	O	Crystal oscillator output pin
26	XTI	I	Master clock input pin
27	DVSS		Ground pin for digital section 0V
28	DVDD		Power supply pin for digital section 3.3V (typ)
29	SMODE	I	Slave / Master mode selector pin
30	SO	O	Serial data output pin for Microcomputer interfaces
31	SI	I	Microcomputer interface serial data input and serial data output control pin
32	SCLK	I	Microcomputer interface serial data clock pin
33	$\overline{RQ}$	I	Microcomputer interface write request pin
34	$\overline{S\_RESET}$	I	System Reset pin
35	$\overline{INIT\_RESET}$	I	Reset pin (for initialization)
36	CKS0	I	Master clock (XTI) select pin (pull down)
37	LFLT		Filter connection pin for PLL
38	AVSS		Analog ground 0V
39, 40	AVDD		Power supply pin for analog section 3.3V (typ)
41	VREFH	I	Analog reference voltage input pin
42	VCOM	O	Common voltage
43	VREFL	I	Analog reference voltage input pin for low-level
44	AVSS		Analog ground 0V
45	AINR-	I	ADC Rch analog inverted input pin
46	AINR+	I	ADC Rch analog non-inverted input pin
47	AINL-	I	ADC Lch analog inverted input pin
48	AINL+	I	ADC Lch analog non-inverted input pin

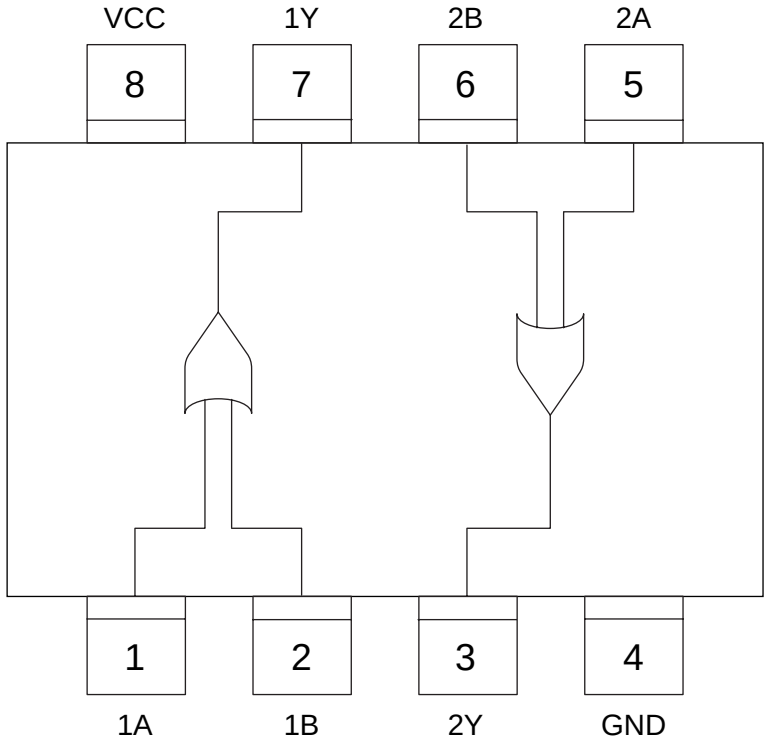
* AK7730VT



*HA12240FP



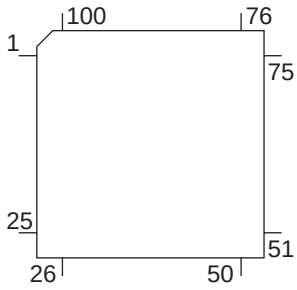
*TC7WH32FK



● Pin Functions (PD5917A)

Pin No.	Pin Name	I/O	Function and Operation
1	ROMCS		ROM chip select
2,3	NC		Not used
4,5	KD2,1	I	Key data input
6	BYTE	I	GND
7	CNVSS	I	GND
8,9	NC		Not used
10	$\overline{\text{RESET}}$	I	Reset input
11	XOUT	O	Crystal oscillating element outpu
12	VSS1		GND
13	XIN	I	Crystal oscillating element inpu
14	VCC1		VCC
15	$\overline{\text{NMI}}$	I	NMI input
16-19	NC		Not used
20	CD_DATA	O	CD data output
21	NC		Not used
22	CKC	O	Fixed pulse output for cathode driver output
23	NC		Not used
24	LS	O	Line sink signal output
25	NC		Not used
26	CKD	O	Data transport / Driver clock output
27	DPDT	I	Display data input
28	KYDT	O	Key data output
29	D1_L	O	Display data MSB output
30	MC15		Not used
31	CLK1	I	Clock input
32	RS2	O	Read signal output
33	D0_L	O	Display data LSB output
34	NC		Not used
35	CLK0	I	Clock input
36	RS1		Read signal
37,38	NC		Not used
39	$\overline{\text{HOLD}}$		(Pull up)
40	NC		Not used
41	BCLK		(Pull up)
42	$\overline{\text{RD}}$	O	Read strobe output
43	NC		Not used
44	wr	O	Write output
45-48	$\overline{\text{CS3-0}}$	O	ROM chip select output
49	A19	O	Address bus output
50	NC		Not used
51-59	A17-9	O	Address bus output
60	VCC2		VCC
61	A8	O	Address bus output
62	VSS		GND
63-69	A7-1	O	Address bus output
70	NC		Not used
71-86	D15-0	I/O	Data bus input/output
87	NC		Not used
88	$\overline{\text{FLBUSY}}$	O	Flash memory busy output
89	$\overline{\text{FLSTBY}}$	O	Flash memory stand by output
90	FL12ON	O	Flash memory selecter porotect output
91,92	NC		Not used
93	KS2	I/O	Key strobe input/output
94	AVSS		VSS
95	KS1	I/O	Key strobe input/output
96	VREF		VSS
97	AVCC		VCC
98	ROMDATA	I/O	ROM data input output
99	NC		Not used
100	ROMCLOCK	O	ROM clock output

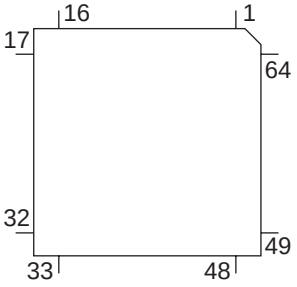
*PD5917A



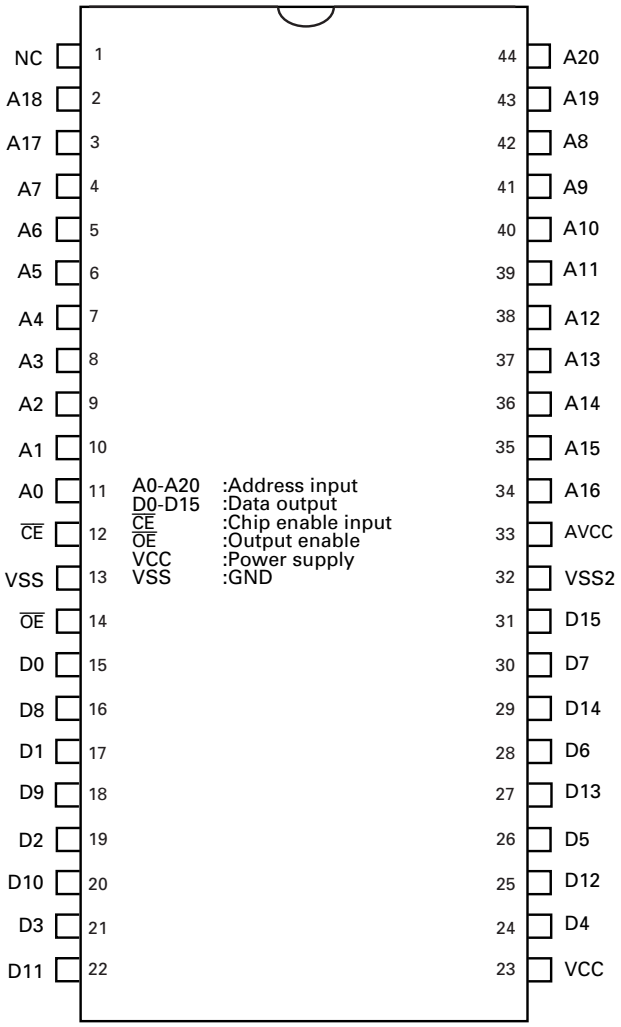
● Pin Functions (PD6340A)

Pin No.	Pin Name	I/O	Function and Operation
1,2	SEG1,0	O	LCD segment signal output
3-5	NC		Not used
6-9	COM3-0	O	LCD common signal output
10	VLCD		LCD driver power supply
11-14	KST3-0	O	Key strobe output
15,16	KDT0,1	I	Key data intput(Analog)
17	REM	I	Remote control data input
18	DPDT	I	Display data input
19	NC		Not used
20	KYDT	O	Key data output
21	MODA		GND
22	X0		Crystal oscillating element connection pin
23	X1		Crystal oscillating element connection pin
24	VSS		GND
25,26	KDT2,3	I	Key data input
27	NC		Not used
28	KST4	O	Key strobe output
29-33	NC		Not used
34-55	SEG31-10	O	LCD segment signal output
56	VDD		Power suplly
57-64	SEG9-2	O	LCD segment signal output

*PD6340A



*PD8122A



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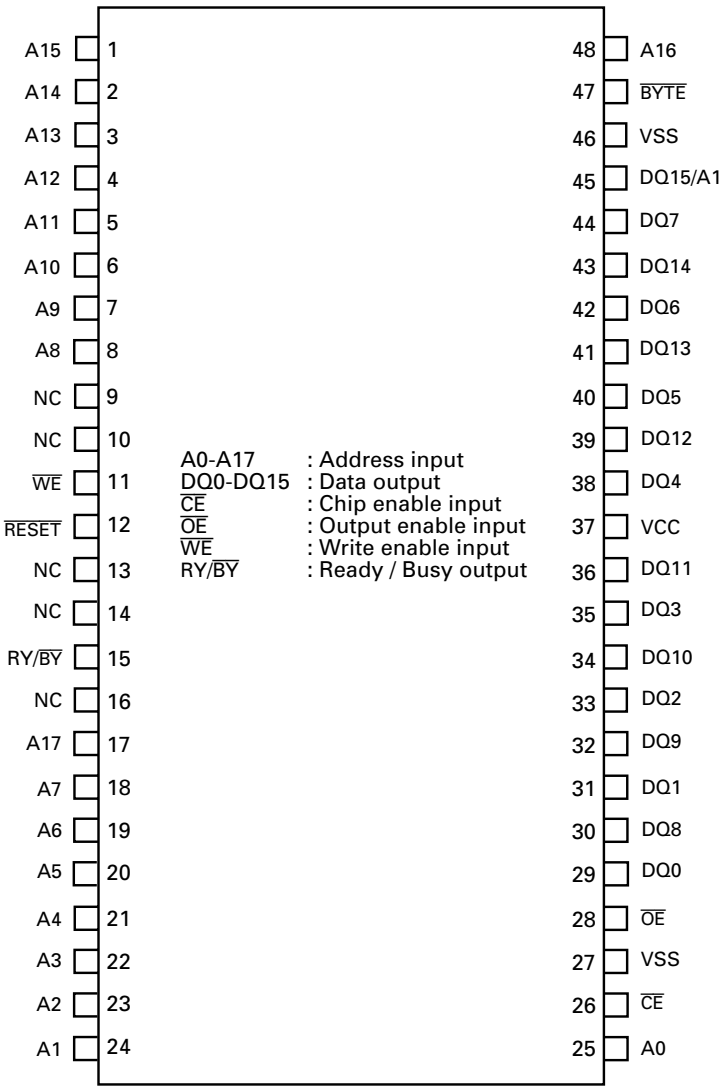
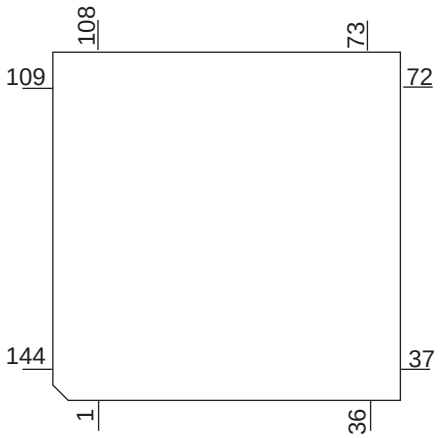


● Pin Functions(UPD63761GJ)

Pin No.	Pin Name	I/O	Function and Operation
1	D.VDD		Power supply for digital circuits
2	D1.GND		GND for 1.6V digital circuits
3	$\overline{\text{RESET}}$	I	Input of reset
4-8	AB12-8	I	Address bus 12-8 from the microcomputer
9-16	AD7-0	I/O	Address/data bus 7-0 to the microcomputer
17	$\overline{\text{CS}}$	I	Chip selection
18	ASTB	I	Address strobe
19	$\overline{\text{READ}}$	I	Control signals(read)
20	$\overline{\text{WRITE}}$	I	Control signals(write)
21	$\overline{\text{WAIT}}$	O	Control signals(wait)
22	INTQ	O	Interruption signals to the external microcomputer
23, 24	IFMODE0, 1	I	Switching the microcomputer I/F 0, 1
25	D1.VDD		Power supply for 1.6V digital circuits
26	DA.VDD		Power supply for DAC
27	ROUT	O	Output of audio for the right channel
28	DA.GND		GND for DAC
29	REGC		Connected to the capacitor for band gap
30	DA.GND		GND for DAC
31	LOUT	O	Output of audio for the left channel
32	DA.VDD		Power supply for DAC
33	X.VDD		Power supply for the crystal oscillator
34	XTAL	I	Connected to the crystal oscillator(16.9344MHz)
35	$\overline{\text{XTAL}}$	O	Connected to the crystal oscillator(16.9344MHz)
36	X.GND		Ground for the crystal oscillator
37	VDDREG15		Control of 1.6V regulator
38	PWMSW0	I	Setup 0 for PWM output(SD, MD)
39-41	TEST3-1	I	Connected to GND
42	PWMSW1	I	Setup 1 for PWM output(FD, TD)
43	TESTEN	I	Connected to GND
44	D1.GND		GND for 1.6V digital circuits
45	DIN	I	Input of audio data
46	DOUT	O	Output of audio data
47	SCKIN	I	Clock input for audio data
48	SCKO	O	Clock output for audio data
49	LRCKIN	I	Input of LRCK for audio data
50	LRCK	O	Output LRCK for audio data
51	$\overline{\text{XTALEN}}$	I	Permission to oscillate 16.9344MHz
52	D1.VDD		Power supply for 1.6V digital circuits
53	RFCK/HOLD	O	Output of RFCK/HOLD signal
54	WFCK/MIRR	O	Output of WFCK/MIRR signal
55	PLCK	O	Output of PLCK
56	LOCK/RFOK	O	Output of LRCK/Output of RFOK
57	C1D1/C8M	O	Information on error correction/C8M : 8MHz
58	C1D2/C16M	O	Information on error correction/C16M : 16MHz
59	C2D1/RMUTE	O	Information on error correction/Mute for Rch
60	C2D2/LMUTE	O	Information on error correction/Mute for Lch
61	C2D3/SHOCK	O	Information on error correction/Detection of vibration
62	D1.GND		GND for 1.6V digital circuits
63	C33M	O	Output of 33.8688MHz(CLK for SDRAM)
64	($\overline{\text{RCS}}$)	O	DRAM $\overline{\text{CS}}$
65	RA11	O	Output of DRAM address 11
66	(CKE)	O	Output of DRAM CKE
67	$\overline{\text{RAS}}$	O	Output of DRAM $\overline{\text{RAS}}$
68	$\overline{\text{CAS0}}$(LDQM)	O	Output of DRAM lower $\overline{\text{CAS}}$(LDQM)
69	$\overline{\text{CAS1}}$(UDQM)	O	Output of DRAM upper $\overline{\text{CAS}}$(UDQM)
70	$\overline{\text{WE}}$	O	Output of DRAM $\overline{\text{WE}}$
71	$\overline{\text{OE}}$($\overline{\text{CAS}}$)	O	Output of DRAM $\overline{\text{OE}}$($\overline{\text{CAS}}$)
72	D.GND		Ground for digital circuits
73-88	RDB0-15	I/O	Input/output of DRAM data0-15
89-99	RA0-10	O	Output of DRAM address0-10

Pin No.	Pin Name	I/O	Function and Operation
100	D.VDD		Power supply for digital circuits
101	FD+	O	Output of focus drive PWM +
102	FD-	O	Output of focus drive PWM -
103	TD+	O	Output of tracking drive PWM +
104	TD-	O	Output of tracking drive PWM -
105	SD+	O	Output of thread drive PWM +
106	SD-	O	Output of thread drive PWM -
107	MD+	O	Output of spindle drive PWM +
108	MD-	O	Output of spindle drive PWM -
109	REFOUTSV	O	REFOUT for servo
110	AD.VDD		Power supply for ADC
111	EFM	O	Output of EFM signals
112	ASY	I	Input of asymmetry
113	ATEST	O	Analog tests
114	RFI	I	Input of RF
115	AD.GND		Ground for the analog system
116	AGCO	O	Output of RF
117	C3T	O	Connection to the capacitor for detecting 3T
118	AGCI	I	Input of AGC
119	RFO	O	Output of RF(AGC)
120, 121	EQ2, 1	I	Equalizer 2, 1
122	RF2-	I	Reversal input of RF2
123	RF-	I	Reversal input of RF
124	A.GND		Ground for the analog system
125	A	I	Input of A
126	C	I	Input of C
127	B	I	Input of B
128	D	I	Input of D
129	F	I	Input of F
130	E	I	Input of E
131	VREFIN	I	Input of reference voltage
132	A.VDD		Power supply for the analog system
133	REFOUT	O	Output of reference voltage
134	REFC	I	Connected to the capacitor for output of REFOUT
135	FE-	I	Reversal input of FE
136	FEO	O	Output of FE
137	ADIN	I	Input of FE, TE A/D converter
138	TE-	I	Reversal input of TE
139	TEO	O	Output of TE
140	TE2	O	TE2
141	TEC	I	TEC
142	LD	O	Output of LD
143	PD	I	Input of PD
144	D.GND		Ground for digital circuits

*UPD63761GJ

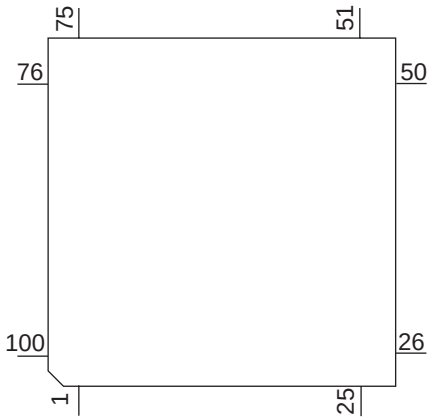


● Pin Functions(PE5423A)

Pin No.	Pin Name	I/O	Format	Function and Operation
1	AVREF			A power supply Positive power supply(5V)
2	AVSS			A power supply GND
3	RFOK	O	C	Output of state of RFOK
4	CLAMP	I	C	CLAMP SW sense input
5	EVDD			E power supply Positive power supply
6	PWM			For changer(PWM)
7	NC			Not used
8	IC/FLMD0			IC : VSS direct connection/FLMOD0 : Pull-down
9	VDD			Positive power supply(5V)
10	REGC			Connected to the capacity stabilizing output of the regulator
11	VSS			GND
12	X1	I		Oscillator connection for mainclock
13	X2			Oscillator connection for mainclock
14	$\overline{\text{RESET}}$	I		System reset input
15	XT1	I		Connected to the oscillator for subclock (connected to VSS via the resistor)
16	XT2			Connected to the oscillator for subclock(Open)
17	PULLDOWN	I		Connected to EVDD or EVSS via the resistor
18	$\overline{\text{EJSW}}$	I	C	Eject key input
19	$\overline{\text{XINT}}$		C	CD LSI interruption signal input
20	NC			Not used
21	$\overline{\text{BRST}}$	I		P-Bus reset input
22	BSI	I		P-Bus serial data input
23	BSO	O	C	P-Bus serial data output
24	$\overline{\text{BSCK}}$	I/O	/C	P-Bus serial clock input/output
25	FTXD	O	C	For flash rewriting(transmitted signal)
26	FRXD	I		For flash rewriting(received signal)
27	BRXEN	I/O	/C	It is possible to receive P-Bus
28	$\overline{\text{BSRQ}}$	I/O	/C	P-Bus service request demand
29	$\overline{\text{DSPOK}}$	I		DSP microcomputer initialization OK input
30	DSCSNS(S903)	I		Disc state sense input
31	8EJ(S905)	I		Input of detection of 8 cm disc ejection
32	12EJ(S904)	I		Input of detection of 12 cm disc ejection
33	EVSS			E power supply GND
34	EVDD			E power supply Positive power supply
35, 36	SRAMLEVEL0, 1	O	C	SRAM level meter output
37	EMPH	O	C	Emphasis information output
38	$\overline{\text{EMPH}}$	O	C	Emphasis information output
39-42	NC			Not used
43	$\overline{\text{ADENA}}$	O	C	A/D reference voltage supply control output
44	LRCKOK	O	C	(DOUT mute output)
45	SRAMLEVEL2	O	C	SRAM level meter output
46	CD3VON	O	C	CD +3.3V power supply control output
47	CONT	O	C	Servo driver power supply control output
48	$\overline{\text{XRST}}$	O	C	CD LSI reset control output
49	VDCONT	O	C	VD power supply control output
50	ROMDATA	I/O	/C	E2PROM data input/output
51	ROMCS	O	C	E2PROM chip selection output
52	ROMCK	O	C	E2PROM clock output
53	LOEJ	O	C	The direction change output of LOAD/EJECT
54	CLCONT	O	C	Driver input change output
55	CDMUTE	O	C	CD mute control output
56-58	INT			For changer(Interruption at the edge)
59	$\overline{\text{XCS}}$	O	C	CD LSI chip selection output
60	NC			Not used
61	$\overline{\text{XWAIT}}$	I		CD LSI write control signal output
62	CLKOUT	O	C	Internal system clock output(Open)
63	LOCK	I		Spindle lock input
64	NC			Not used
65	$\overline{\text{XWRITE}}$	O		CD LSI write control signal output

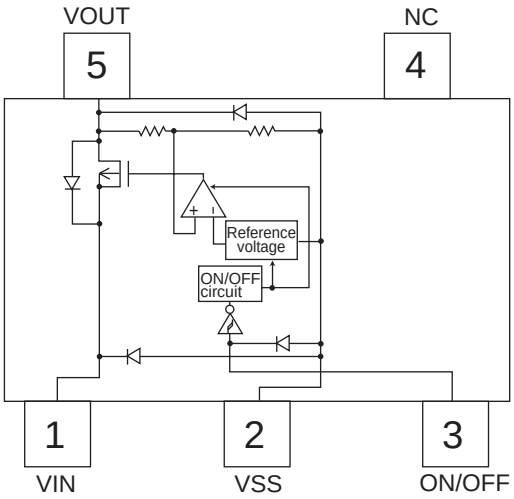
Pin No.	Pin Name	I/O	Format	Function and Operation
66	NC			Not used
67	$\overline{\text{XREAD}}$	O		CD LSI read control signal output
68	XASTB	O		CD LSI address strobe output
69	BVSS			B power supply GND
70	BVDD			B power supply Positive power supply
71-86	AD0-15	I/O	/C	Address/data Bus 0-15
87-90	NC			Not used
91-93	A/D			For changer(A/D)
94	$\overline{\text{CSENS}}$	I		Flap closing sense input
95	TYPE_A/D	I		CD-DA analog/digital output change setup
96	$\overline{\text{TESTIN}}$	I		Chip check test program starting input
97	HOME	I		Home SW sense input
98	TEMP			Temperature information sense input
99	VDSENS			VD power supply short sense input
100	NC			Not used

*PE5423A

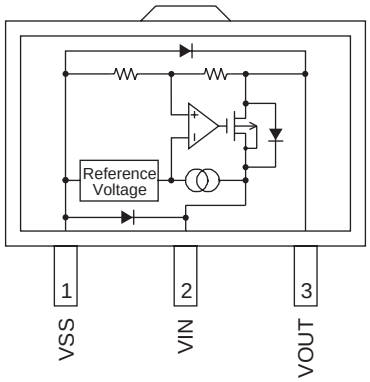


Format	Meaning
C	CMOS

*S-L2980A15MC-C6A



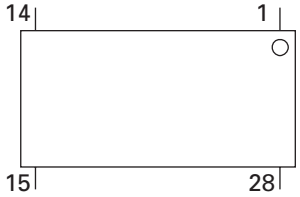
*S-812C33AUA-C2N



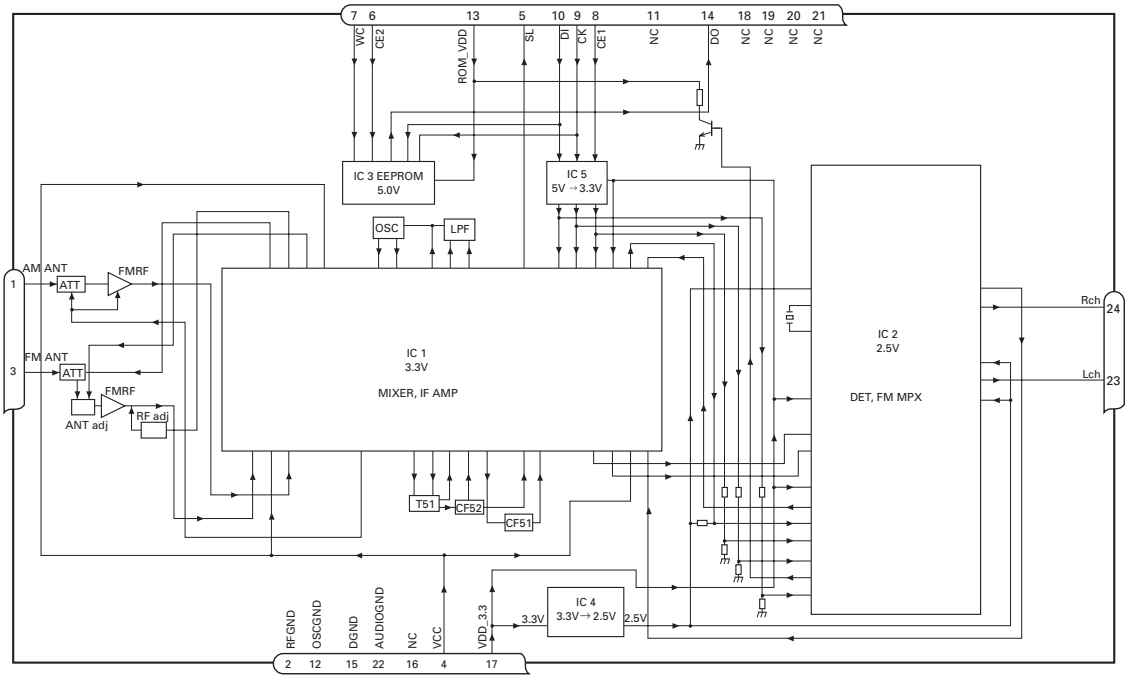
● Pin Functions(BA5835FM)

Pin No.	Pin Name	Function and Operation
1	VR	Input pin for reference voltage
2	OPIN2(+)	Input pin for non-inverting input for CH2 preamplifier
3	OPIN2(-)	Input pin for inverting input for CH2 preamplifier
4	OPOUT2	Output pin for CH2 preamplifier
5	OPIN1(+)	Input pin for non-inverting input for CH1 preamplifier
6	OPIN1(-)	Input pin for inverting input from CH1 preamplifier
7	OPOUT1	Output pin for CH1 preamplifier
8	GND	Ground pin
9	MUTE	Mute control pin
10	POWVCC1	Power supply pin for CH1, CH2, and CH3 at "Power" stage
11	VO1(-)	Driver CH1 - Negative output
12	VO1(+)	Driver CH2 - Positive output
13	VO2(-)	Driver CH2 - Negative output
14	VO2(+)	Driver CH2 - Positive output
15	VO3(+)	Driver CH2 - Positive output
16	VO3(-)	Driver CH2 - Negative output
17	VO4(+)	Driver CH4 - Positive output
18	VO4(-)	Driver CH4 - Negative output
19	POWVCC2	Power supply pin for CH4 at "Power" stage
20	GND	Ground pin
21	CNT	Control pin
22	LDIN	Loading input
23	OPOUTSL	Output pin for preamplifier for thread
24	OPINLSL	Input pin for preamplifier for thread
25	OPOUT3	CH3 preamplifier output pin
26	OPIN3(-)	Input pin for inverting input for CH3 preamplifier
27	OPIN3(+)	Input pin for non-inverting input for CH3 preamplifier
28	PREVCC	PreVcc

BA5835FM



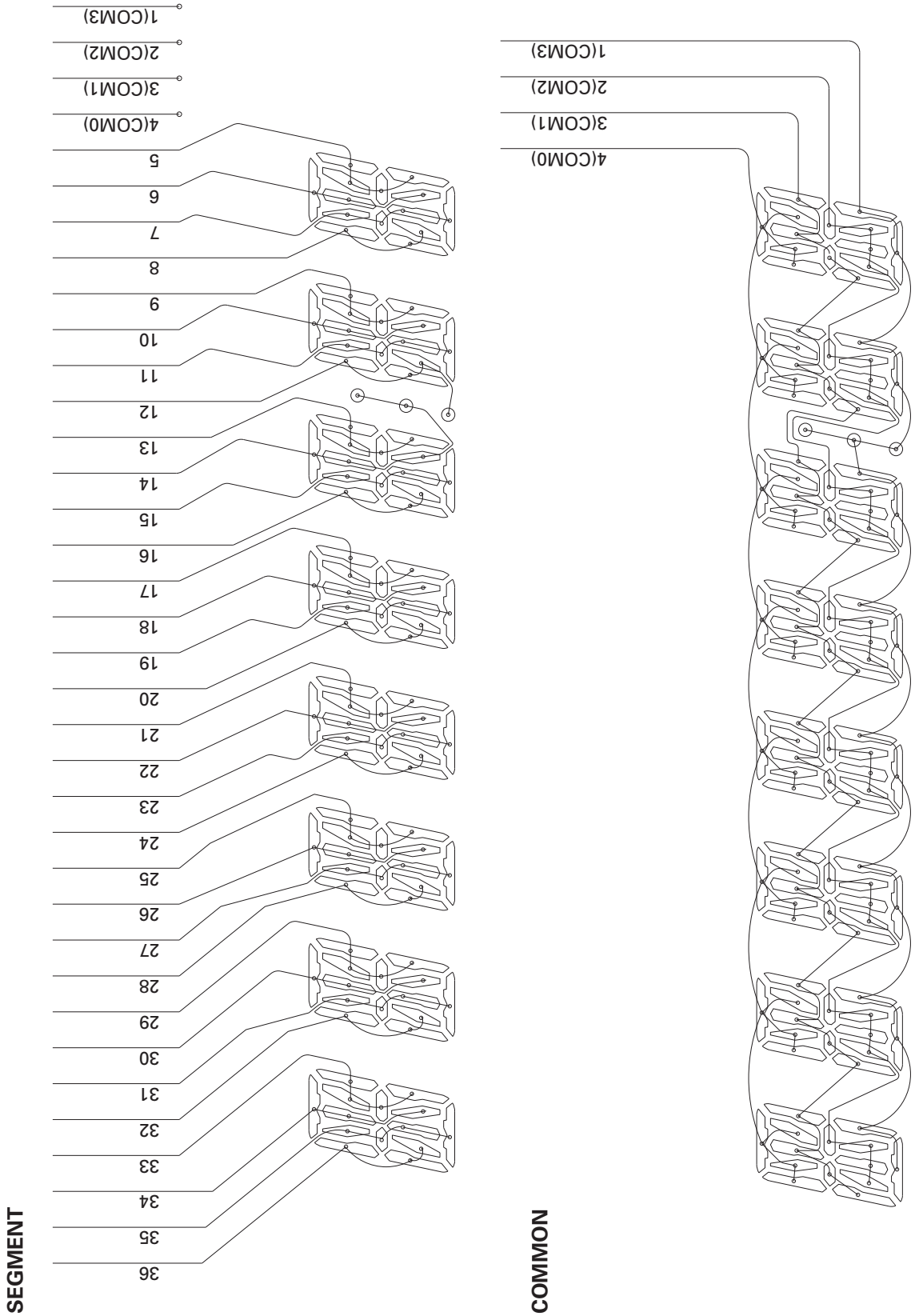
● FM/AM Tuner Unit



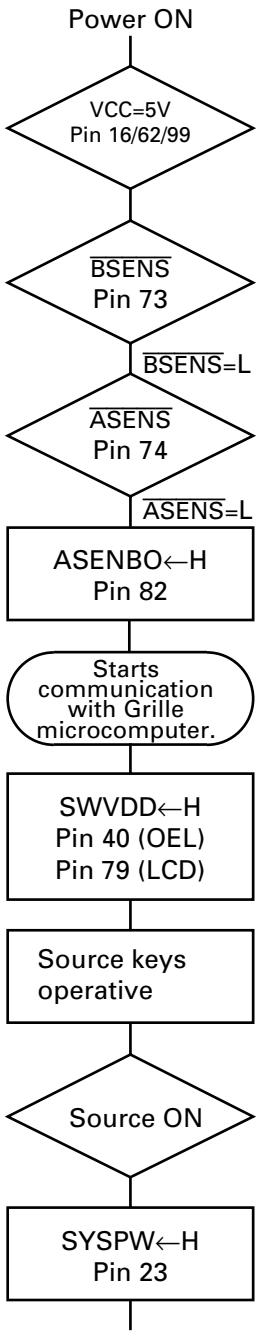
No.	Symbol	I/O	Explain	
1	AMANT	I	AM antenna input	AM antenna input high impedance AMANT pin is connected with an all antenna by way of 4.7μH. (LAU type inductor) A series circuit including an inductor and a resistor is connected with RF ground for the countermeasure against the hum of power transmission line.
2	RFGND		RF ground	Ground of antenna block
3	FMANT	I	FM antenna input	Input of FM antenna 75Ω Surge absorber(DSP-201M-S00B) is necessary.
4	VCC		power supply	The power supply for analog block. D.C 8.4V ± 0.3V
5	SL	O	signal level	Output of FM/AM signals level
6	CE2	I	chip enable-2	Chip enable for EEPROM "Low" active
7	WC	I	write control	You can write EEPROM, when EEPROM write control is "Low". Ordinary non connection
8	CE1	I	chip enable-1	Chip enable for AF•RF "High" active
9	CK	I	clock	Clock
10	DI	I	data in	Data input
11	NC		non connection	Not used
12	OSCGND		osc ground	Ground of oscillator block
13	ROM_VDD		power supply	Power supply for EEPROM pin 13 is connected with a power supply of micro computer.
14	DO	O	data out	Data output
15	DGND		digital ground	Ground of digital block
16	NC		non connection	Not used
17	VDD_3.3		power supply	The power supply for digital block. 3.3V ± 0.2V
18	NC		non connection	Not used
19	NC		non connection	Not used
20	NC		non connection	Not used
21	NC		non connection	Not used
22	AUDIOGND		audio ground	Ground of audio block
23	L ch	O	L channel output	FM stereo "L-ch" signal output or AM audio output
24	R ch	O	R channel output	FM stereo "R-ch" signal output or AM audio output

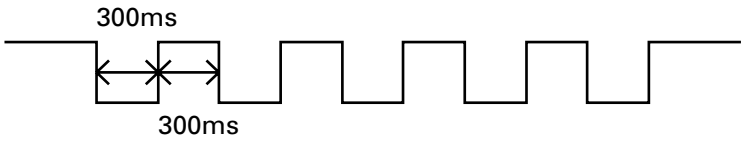
7.2.2 DISPLAY

● **CAW1704**



7.3 OPERATIONAL FLOW CHART





In case of the above signal, the communication with Grille microcomputer may fail.
If the time interval is not 300msec, the oscillator may be defective.

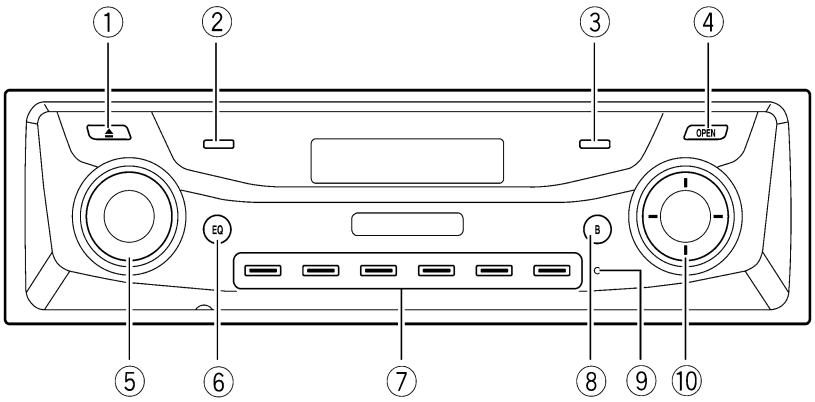
Completes power-on operation.
(After that, proceed to each source operation)

7.4 CLEANING

Before shipping out the product, be sure to clean the following portions by using the prescribed cleaning tools:

Portions to be cleaned	Cleaning tools
CD pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

8. OPERATIONS



Head unit (front panel close)

① **EJECT button**
Press to eject a CD from your built-in CD player.

② **CLOCK button**
Press to change to the clock display.
Press and hold to select the channel select setting when using an XM tuner.

③ **PAUSE button**
Press to turn pause on or off.

④ **OPEN button**
Press to open or close the front panel.
When you want to operate buttons inside the front panel, press **OPEN** to open the front panel.

⑤ **SOURCE button, VOLUME**
This unit is turned on by selecting a source.
Press to cycle through all the available sources.
Rotate it to increase or decrease the volume.

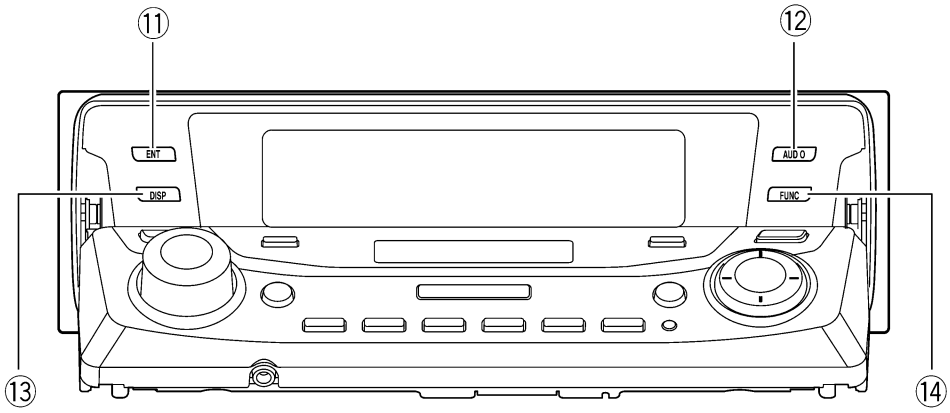
⑥ **EQ button**
Press to select various equalizer curves.

⑦ **1–6 buttons**
Press for preset tuning and disc number search when using a multi-CD player.

⑧ **BAND button**
Press to select among three FM bands and one AM band and to cancel the control mode of functions.

⑨ **RESET button**
Press to reset the microprocessor.

⑩ **▲/▼/◄/► buttons**
Press to do manual seek tuning, fast forward, reverse and track search controls.
Also used for controlling functions.



Head unit (front panel open)

These buttons listed below can be operated only when the front panel opened.

⑪ **ENTERTAINMENT button**

Press to change to the entertainment display.
Press and hold to change the display form.

⑫ **AUDIO button**

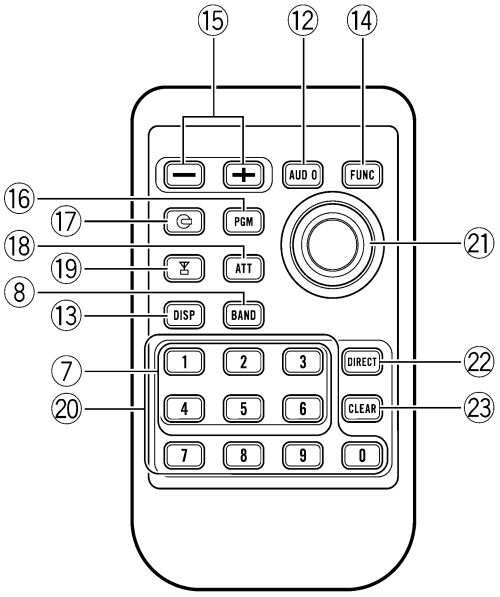
Press to select various sound quality controls.

⑬ **DISPLAY button**

Press to select different displays.

⑭ **FUNCTION button**

Press to select functions.



Remote control

Operation is the same as when using the buttons on the head unit.

⑮ VOLUME buttons

Press to increase or decrease the volume.

⑯ PGM button

Press to operate the preprogrammed functions for each source.

⑰ CD button

Press to select the built-in or multi-CD player as the source.

⑱ ATT button

Press to quickly lower the volume level, by about 90%. Press once more to return to the original volume level.

⑲ TUNER button

Press to select the tuner as the source.

⑳ NUMBER buttons

Press to enter the number for selecting a desired track in direct track select mode.
Press to enter the number for selecting an XM channel directly, in direct channel select mode when using an XM tuner.

㉑ Joystick

Move to do manual seek tuning, fast forward, reverse and track search controls.
Also used for controlling functions.
Functions are the same as ▲/▼/◄/► buttons.

㉒ DIRECT button

Press to directly select the desired track.

㉓ CLEAR button

Press to cancel the input number when **NUMBER** are used.▣

Playing a CD

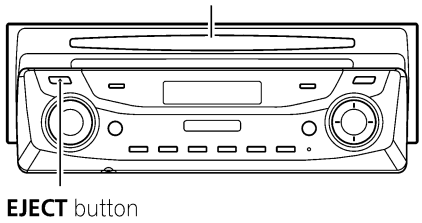
These are the basic steps necessary to play a CD with your built-in CD player.

① **Track number indicator**
Shows the track currently playing.

② **Play time indicator**
Shows the elapsed playing time of the current track.

1 Press EJECT.
CD loading slot appears.
■ After a CD has been inserted, press **SOURCE** to select the built-in CD player.

2 Insert a CD into the CD loading slot.
Playback will automatically start.



■ You can eject a CD by pressing **EJECT**.
■ If the front panel is in the eject position (shown above), buttons other than **EJECT**, **VOLUME**, **OPEN**, and **ATT** (on the remote control) do not operate.

3 Use VOLUME to adjust the sound level.
Rotate it to increase or decrease the volume.

4 To perform fast forward or reverse, press and hold ◄ or ►.
■ If you select **Rough search**, pressing and holding ◄ or ► enables you to search every 10 tracks in the current disc.

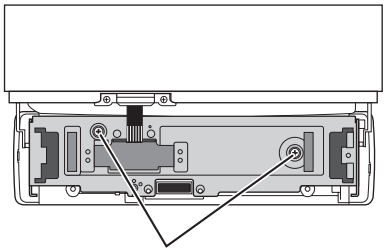
5 To skip back or forward to another track, press ◄ or ►.
Pressing ► skips to the start of the next track. Pressing ◄ once skips to the start of the current track. Pressing again will skip to the previous track.

Notes

- The built-in CD player plays one, standard, 12-cm or 8-cm (single) CD at a time. Do not use an adapter when playing 8-cm CDs.
- Do not insert anything other than a CD into the CD loading slot.
- There is sometimes a delay between starting up CD playback and the sound being issued. When being read in, **Format read** is displayed.
- If you cannot insert a disc completely or if after you insert a disc the disc does not play, check that the label side of the disc is up. Press **EJECT** to eject the disc, and check the disc for damage before inserting it again.
- If the built-in CD player does not operate properly, an error message such as **ERROR-11** may be displayed.
- You can eject the CD by pressing and holding **EJECT** with eject position when the CD loading or ejecting cannot operate properly. ▣

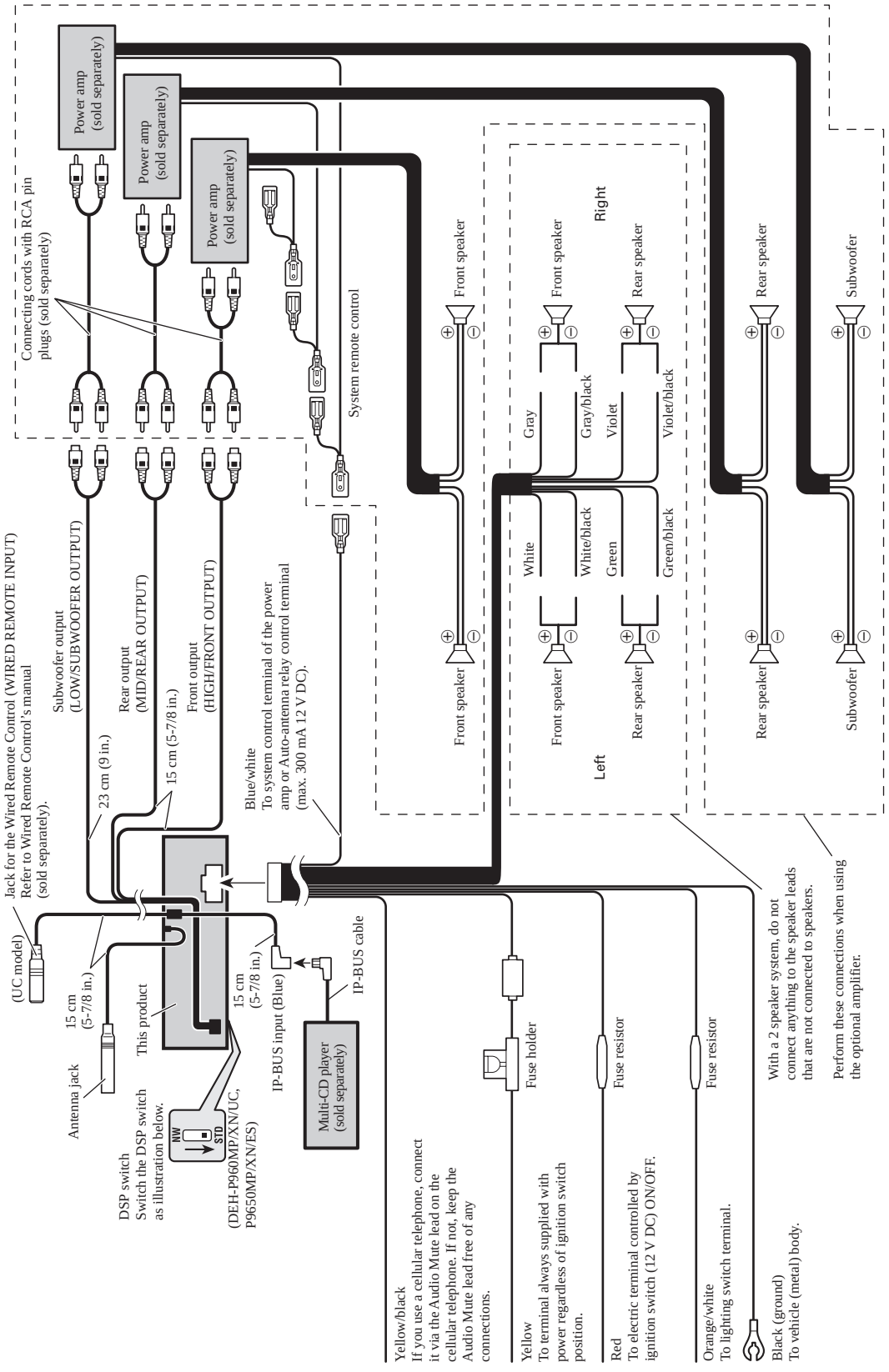
About the fixing screws for the front panel

If you do not operate the removing and attaching the front panel function, use the supplied fixing screws to fix the front panel to this unit.



Fixing screws
BPZ20P060FZK(UC model)
CXX1646(ES model)

CONNECTION DIAGRAM



● Jigs list

Disc : ABEX TCD-782
Cleaning liquid : GEM1004
Cleaning paper : GED-008
Cord : GGD1292

Pioneer sound.vision.soul

Service Manual

ORDER NO.
CRT3179

CD MECHANISM MODULE(S10CODE2)

CX-3098

- **This service manual describes the operation of the CD mechanism module incorporated in models listed in the table below.**
- **When performing repairs use this manual together with the specific manual for model under repair.**

Model	Service Manual	CD Mechanism Module
DEH-P3600MP/XM/EW DEH-P3600MPB/XM/EW DEH-P3630MP/XM/EW	CRT3170	CXK5665
DEH-P460MP/XM/UC DEH-P4600MP/XM/UC DEH-P4650MP/XM/ES	CRT3171	

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K-ZZA. DEC. 2003 printed in Japan

1. CIRCUIT DESCRIPTIONS

Recently, most CD LSI's have included DAC, RF amplifier and other peripheral circuits, as well as the core circuit DSP. This series of mechanisms employ a multi-task LSI UPD63761GJ, which has CD-ROM decoder and MP3/WMA decoder in addition to the CD block as shown in the Fig.1.0.1. This enables to reproduce a CD-ROM where MP3/WMA data is recorded.

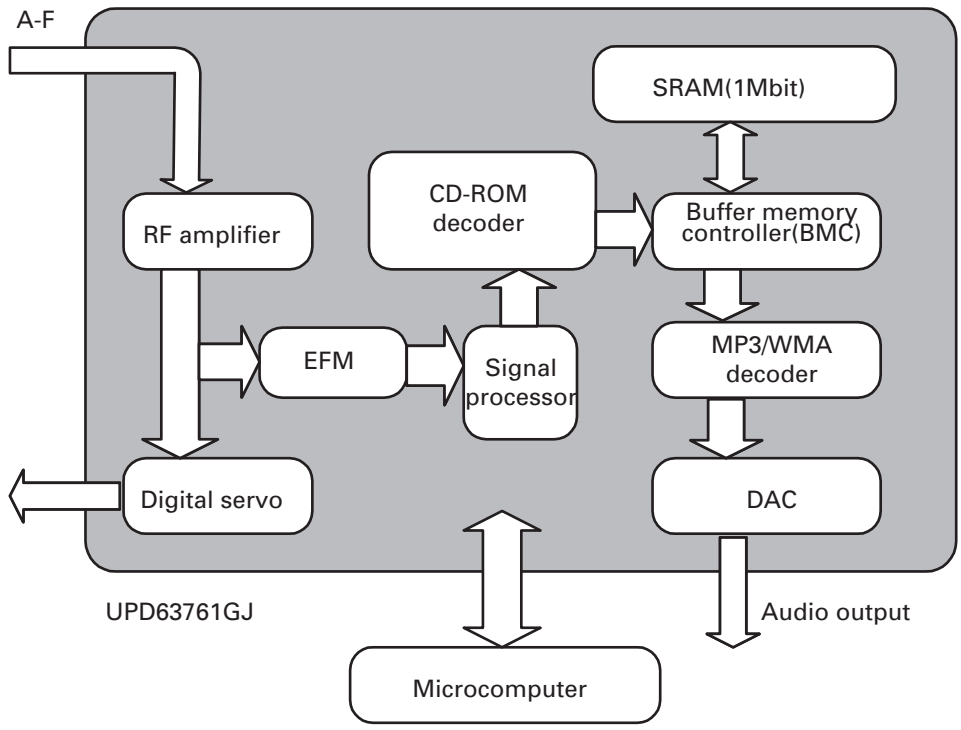


Fig.1.0.1 Block diagram of CD LSI UPD63761GJ

1.1 PREAMPLIFIER BLOCK (UPD63761GJ: IC201)

In the preamplifier block, the pickup output signals are processed to generate signals that are used for the next-stage blocks: the servo block, demodulator, and control.

After I/V-converted by the preamplifier with built-in photo detectors (inside the pickup), the signals are applied to the preamplifier block in the CD LSI UPD63761GJ (IC201). After added by the RF amplifier in this block, these signals are used to produce necessary signals such as RF, FE, TE, and TE zero-cross signals.

The CD LSI employs a single power supply system of + 3.3V. Therefore, the REFO (1.65V) is used as the reference voltage both for this CD LSI and the pickup. The LSI produces the REFO signal by using the REFOUT via the buffer amplifier and outputs from the pin 133. All the measurements should be made based on this REFO.

Caution: Be careful not to short the REFO and GRD when measuring.

1.1.1 APC (Automatic Power Control)

A laser diode has extremely negative temperature characteristics in optical output at constant-current drive. To keep the output constant, the LD current is controlled by monitor diodes. This is called the APC circuit. The LD current is calculated at about 30mA, which is the voltage between LD1 and V3R3D divided by 7.5 (ohms).

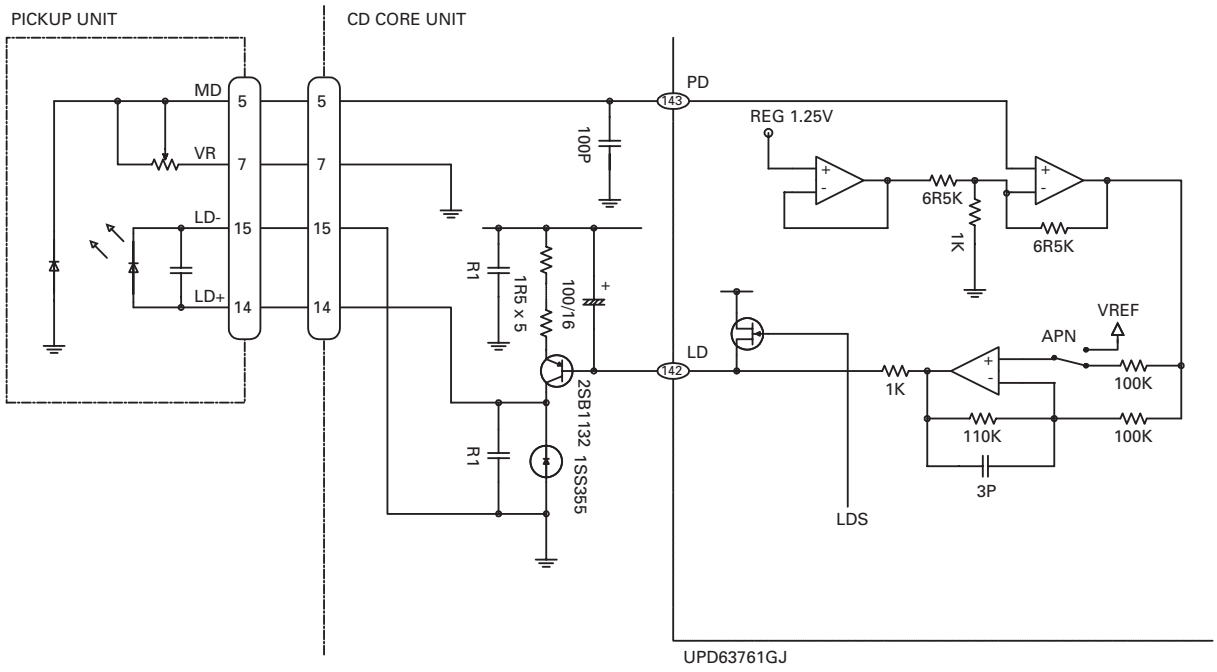


Fig. 1.1.1 APC

1.1.2 RF and RFAGC amplifiers

The photo-detector outputs (A + C) and (B + D) are added, amplified, and equalized inside this LSI, and then provided as the RF signal from the RFI terminal. The RF signal can be used for eye-pattern check.

The low frequency component of the RFO voltage is:

RFO = (A + B + C + D) x 2

The RFO is used for the FOK generation circuit and RF offset adjustment circuit.

The RFI output from the pin 119 is A/C-coupled outside this LSI, and returned to the pin 118 of this LSI. The signal is amplified in the RFAGC amplifier to obtain the RFAGC signal. This LSI is equipped with the RFAGC auto-adjustment function as explained below. This function automatically controls the RFO level to keep at 1.5V by switching the feed-back gain for the RFAGC amplifier.

The RFO signal is also used for the EFM, DFCT, MIRR, and RFAGC auto-adjustment circuits.

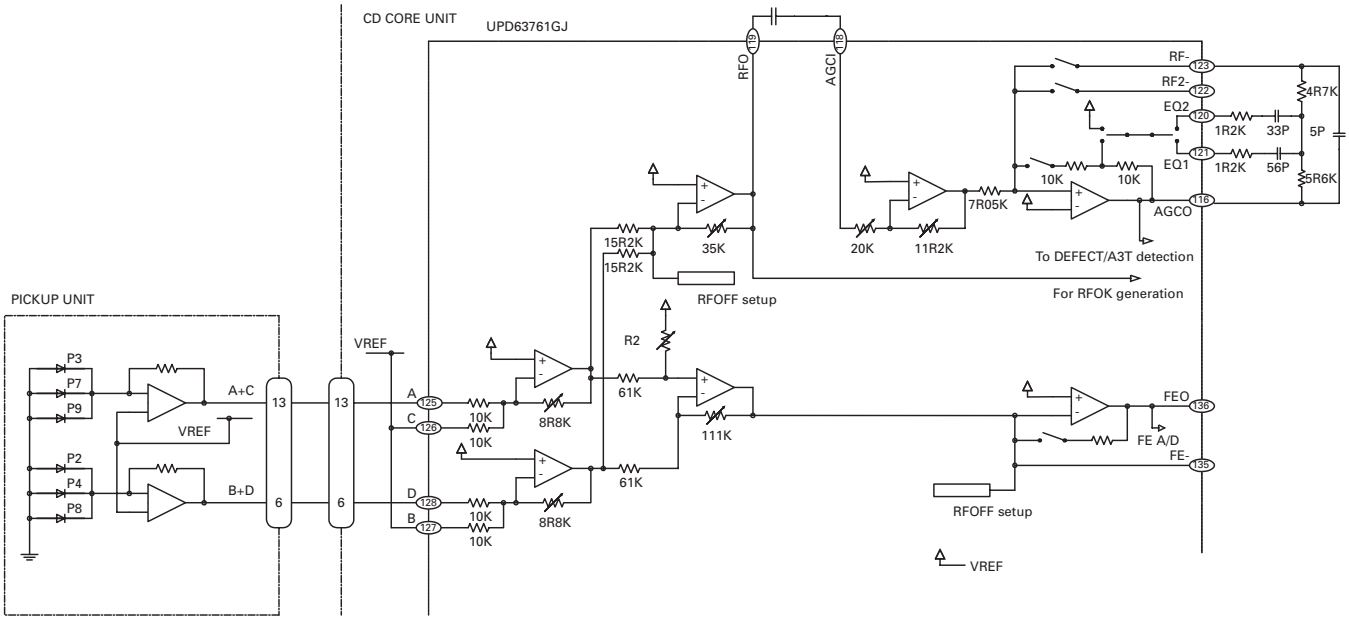


Fig. 1.1.2 RF/AGC/FE

1.1.3 Focus error amplifier

The photo-detector outputs (A + C) and (B + D) are applied to the differential amplifier and the error amplifier to obtain the (A + C - B - D) signal, which is then provided from the pin 91 as the FE signal.
The low frequency component of the FE voltage is:
FE = (A + C - B - D) x 8.8/10k x 111k/61k x 160k/72k
= (A + C - B - D) x 3.5
The FE output shows 1.5Vp-p S-shaped curve based on the REFO. For the next-stage amplifiers, the cutoff frequency is 14.6kHz.

1.1.4 RFOK

The RFOK circuit generates the RFOK signal, which indicates focus-close timing and focus-close status during the play mode, and outputs from the pin 55. This signal is shifted to "H" when the focus is closed and during the play mode.
The DC level of the RFI signal is peak-held in the digital block and compared with a certain threshold level to generate the RFOK signal. Therefore, even on a non-pit area or a mirror-surface area of a disc, the RFOK becomes "H" and the focus is closed.
This RFOK signal is also applied to the microcomputer via the low-pass filer as the FOK signal, which is used for protection and RF amplifier gain switching.

1.1.5 Tracking error amplifier

The photo-detector outputs E and F are applied to the differential amplifier and the error amplifier to obtain the (E - F) signal, and then provided from the pin 136 as the TE signal.
The low frequency component of the TE voltage is:
TEO = (E - F) x 63k/112k x 160k/160k x 181k/45.4k x 160k/80k
= (E - F) x 4.48
The TE output provides the TE waveform of about 1.3Vp-p based on the REFO. For the next-stage amplifiers, the cutoff frequency is 21.1kHz.

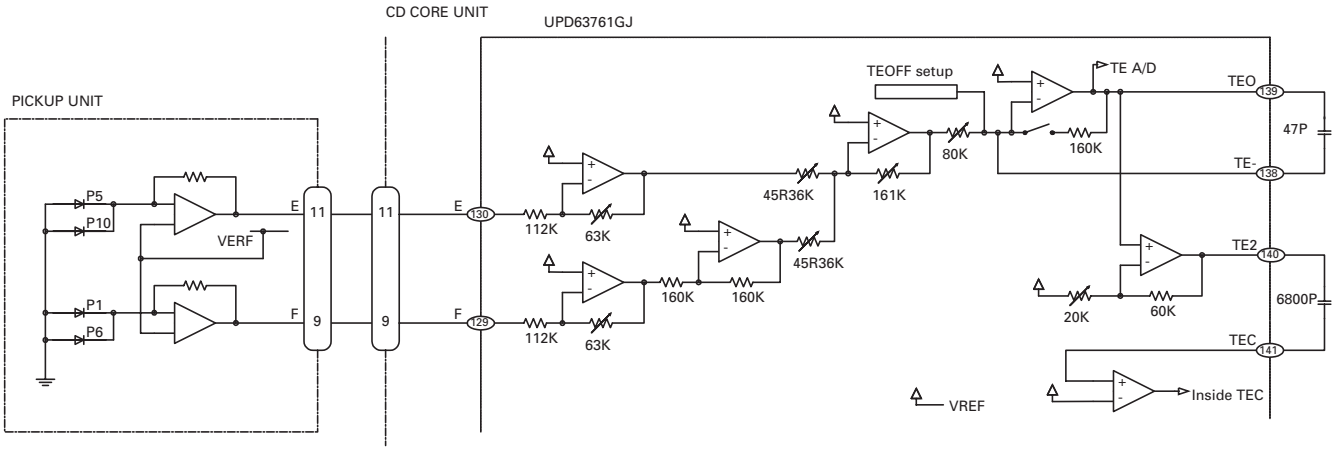


Fig. 1.1.3 TE

1.1.6 Tracking zero-cross amplifier

The tracking zero-cross signal (hereinafter TEC signal) is obtained by amplifying the TE signal 4 times, and used to detect the tracking-error zero-cross point.

By using the information on this point, the following two operations can be performed:

1. Track counting in the carriage move and track jump modes
2. Sensing the lens-moving direction at the moment of the tracking close (The sensing result is used for the tracking brake circuit as explained below.)

The frequency range of the TEC signal is between 300Hz and 20kHz.

TEC voltage = TE level x 4

The TEC level can be calculated at 4.62V. This level exceeds the D range of the operational amplifier, and the signal gets clipped. However, it can be ignored because the CD LSI only uses the signal at the zero-cross point.

1.1.7 EFM

The EFM circuit converts the RF signal into a digital signal expressed in binary digits 0 and 1. The AGCO output from the pin 116 is A/C-coupled in the peripheral circuit, fed back to the LSI from the pin 114, and sent to the EFM circuit inside the LSI.

On scratched or dirty discs, part of the RF signal recorded may be missing. On other discs, part of the RF signal recorded may be asymmetric, which was caused by dispersion in production quality. Such lack of information cannot be completely eliminated by this AC coupling process. Therefore, by utilizing the fifty-fifty occurrence ratio of binary digits (0 and 1) in the EFM signal, the EFM comparator reference voltage ASY is controlled, so that the comparator level always stays around the center of the RFO signal. The reference voltage ASY is made from the EFM comparator output via the low-pass filter. The EFM signal is put out from the pin 111.

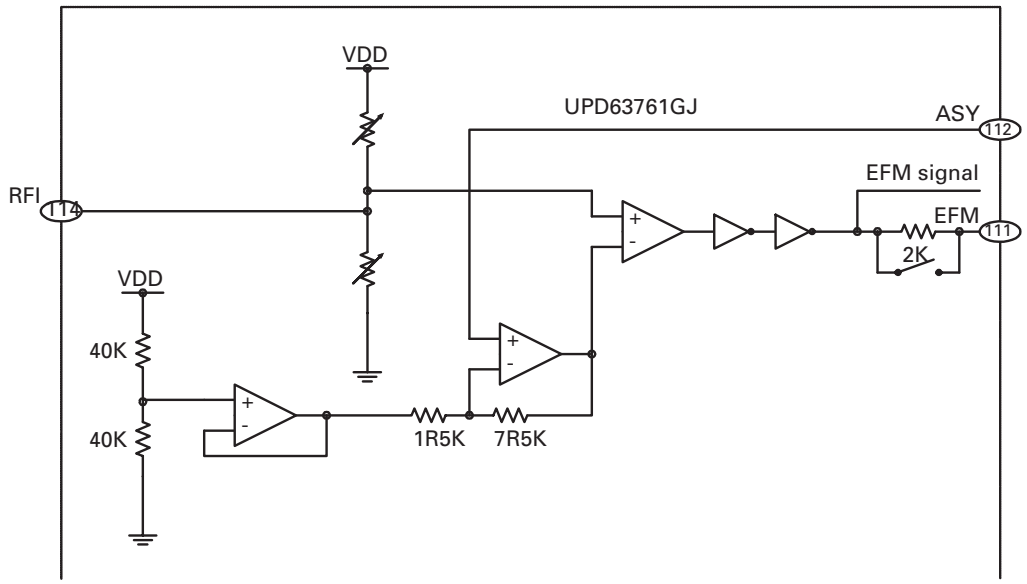


Fig. 1.1.4 EFM

1.2 SERVO BLOCK (UPD63761GJ: IC201)

The servo block controls the servo systems for error signal equalizing, in-focus, track jump and carriage move and so on. The DSP block is a signal-processing block, where data decoding, error correction, and compensation are performed.

After A/D-converted, the FE and TE signals (generated in the preamplifier block) are applied to the servo block and used to generate the drive signals for the focus, tracking, and carriage servos.

The EFM signal is decoded in the DSP block, and finally sent out as the audio signal after D/A-converted. In this decoding process, the spindle servo error signal is generated, supplied to the spindle servo block, and used to generate the spindle drive signal.

The drive signals for focus, tracking, carriage, and spindle servos (FD, TD, SD, and MD) are provided as PWM3 data, and then converted to the analog data by the low-pass filter embedded in the driver IC BA5835FM (IC301). These analog drive signals can be monitored by the FIN, TIN, CIN, and SIN signals respectively. Afterwards, the signals are amplified and applied to each servo's actuator and motor.

1.2.1 Focus servo system

In the focus servo system, the digital equalizer block works as its main equalizer. The figure 1.2.1 shows the block diagram of the focus servo system.

To close the focus loop circuit, the lens should be moved to within the in-focus range. While moving the lens up and down by using the focus search triangular signal, the system tries to find the in-focus point. In the meantime, the spindle motor rotation is kept at the prescribed one by using the kick mode.

The servo LSI monitors the FE and RFOK signals and automatically performs the focus close operations at an appropriate timing. The focus loop will close when the following three conditions are satisfied at the same time:

1) The lens moves toward the disc surface.
2) The RFOK signal is shifted to "H".
3) The FE signal is zero-crossed. At last, the FE signal comes to the zero level (or REFO).

When the focus loop is closed, the FSS bit is shifted from "H" to "L". The microcomputer starts monitoring the RFOK signal obtained through the low-pass filter 10msec after that.

If the RFOK signal is detected as "L", the microcomputer will take several actions including protection.

The timing chart for focus close operations is shown in fig. 1.2.2.

(This shows the case where the system fails focus close.)

In the test mode, the S-shaped curve, search voltage, and actual lens movement can be confirmed by pressing the focus close button when the focus mode selector displays 01.

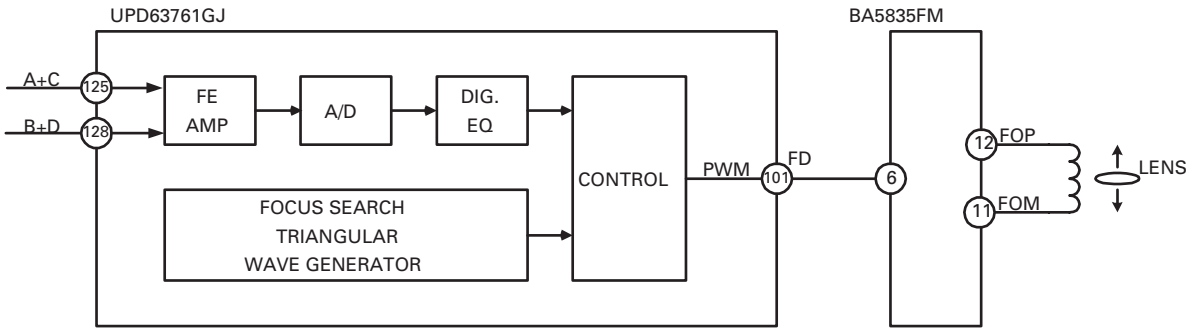


Fig. 1.2.1 Block diagram of the focus servo system

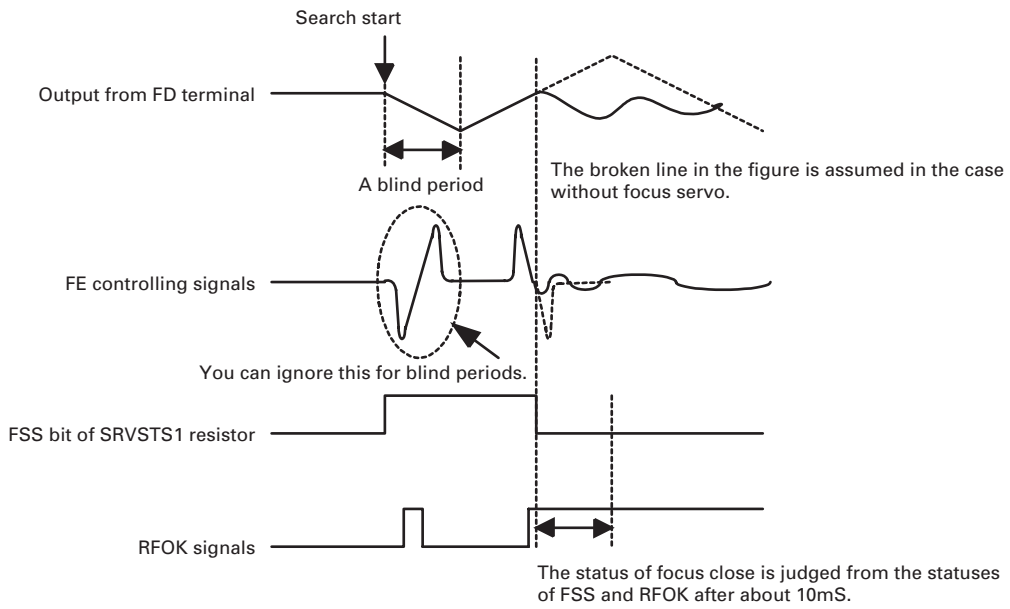

Search start
Output from FD terminal
A blind period
The broken line in the figure is assumed in the case without focus servo.
FE controlling signals
You can ignore this for blind periods.
FSS bit of SRVSTS1 resistor
RFOK signals
The status of focus close is judged from the statuses of FSS and RFOK after about 10mS.

Fig. 1.2.2 Timing chart for focus close operations

1.2.2 Tracking servo system

In the tracking servo system, the digital equalizer block is used as its main equalizer. The figure 1.2.3 shows the block diagram of the tracking servo system.

(a) Track jump

Track jump operation is automatically performed by the auto-sequence function inside the LSI with a command from the microcomputer. In the search mode, the following track jump modes are available: 1, 4, and 100

In the test mode, 1, 32, and 32*3 track jump modes, and carriage move mode are available and can be switched by selecting the mode.

For track jumps, first, the microcomputer sets about half the number of tracks to be jumped as the target. (Ex. For 10 track jumps, it should be 5 or so.) Using the TEC signal, the microcomputer counts up tracks. When the counter reaches the target set by the microcomputer, a brake pulse is sent out to stop the lens. The pulse width is determined by the microcomputer. Then, the system closes the tracking loop and proceeds to the normal play. At this moment, to make it easier to close the tracking loop, the brake circuit is kept ON for 50msec after the brake pulse, and the tracking servo gain is increased.

In the normal operation mode, the FF/REW operation is realized by continuously repeating single jumps about 10 times faster than the normal single jump operation.

(b) Brake circuit

The brake circuit stabilizes the servo-loop close operation even under poor conditions, especially in the setting-up mode or track jump mode. This circuit detects the lens-moving direction and emits only the drive signal for the opposite direction to slow down the lens. Thus, this makes it easier to close the tracking servo loop. The off-track direction is detected from the phases of the TEC and MIRR signals.

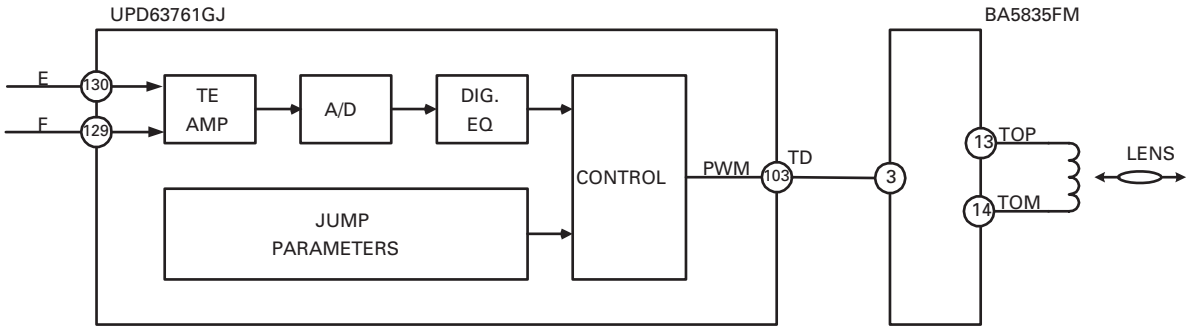


Fig. 1.2.3 Block diagram of the tracking servo system

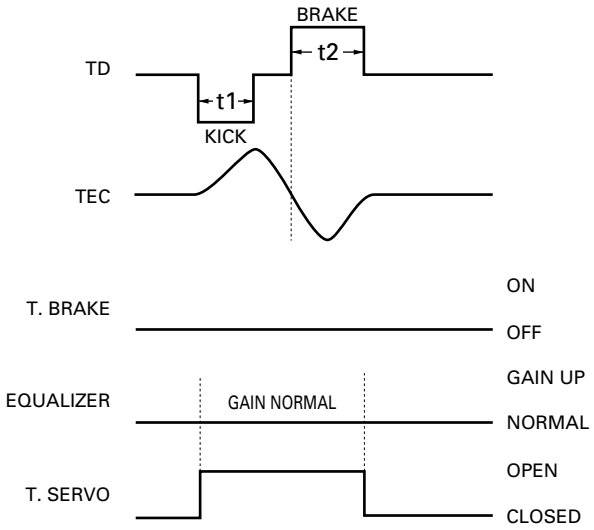


Fig. 1.2.4 Single-track jump

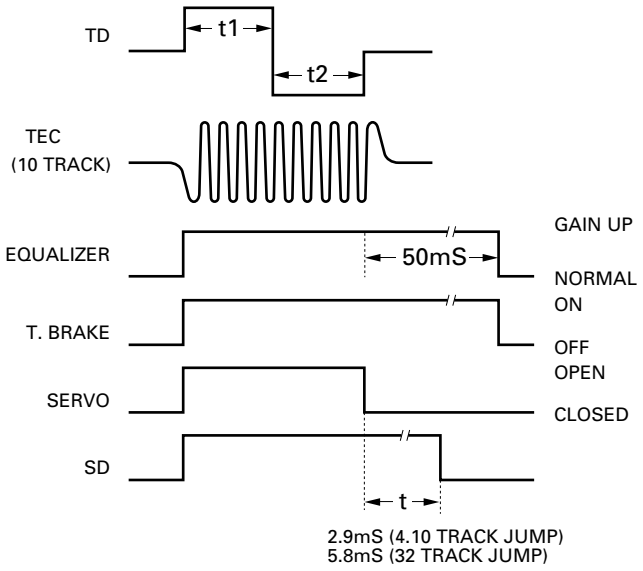
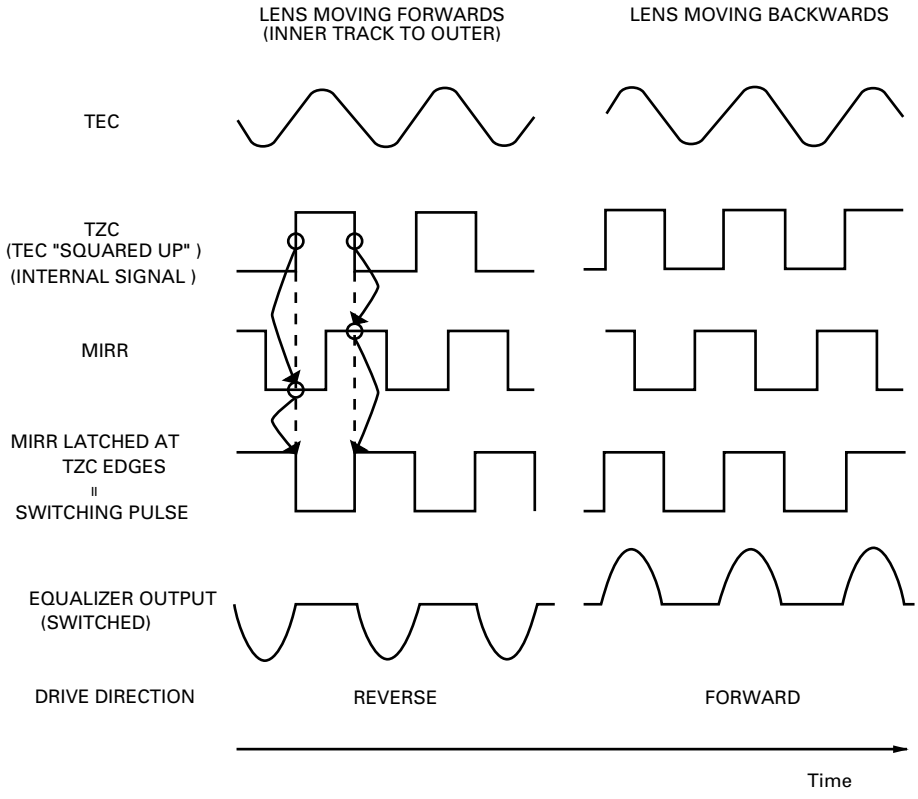


Fig. 1.2.5 Multi-track jump



Note : Equalizer output assumed to hava same phase as TEC.

Fig. 1.2.6 Track brake

1.2.3 Carriage servo system

In the carriage servo system, the low frequency component from the tracking equalizer (the information on the lens position) is transferred to the carriage equalizer, where the gain is increased to a certain level, and then sent out from the LSI as the carriage drive signal. This signal is applied to the carriage motor via the driver IC.

During the play mode, when the lens offset reaches a certain level, it is necessary to move the pickup toward the FORWARD direction. The equalizer gain is adjusted so that the output over the carriage motor starting voltage is sent out in such a case. In actual operations, only when the equalizer output exceeds the threshold level preset in the servo LSI, the drive signal is sent out. This can reduce the consumption power.

With an eccentric disc loaded, before the whole pickup starts moving, the equalizer output may exceed the threshold level a few times. In this case, the drive signal applied from the LSI shows pulse-like waveforms.

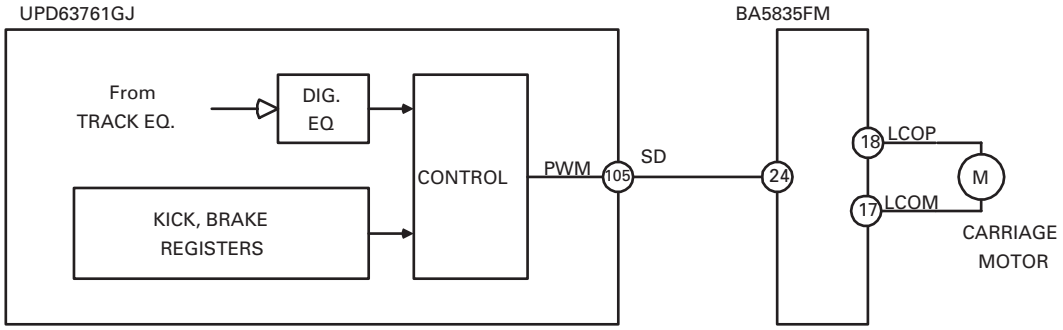


Fig. 1.2.7 Block diagram for the carriage servo block

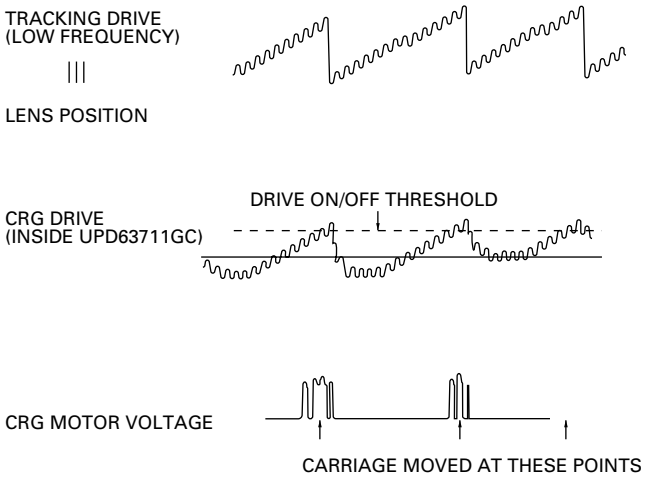


Fig. 1.2.8 Waveforms of the carriage signal

1.2.4 Spindle servo system

In the spindle servo system, the following seven modes are available:

1) Kick

Used to accelerate the disc rotation in the setting-up mode.

2) Offset

a. Used in the setting-up mode until the AGC completes after the kick mode.

b. Used when the focus loop is unlocked during the play mode and until it is locked again.

In both cases, the mode is to keep the disc rotation near to the appropriate one.

3) Applicable servo

In the normal operation, the CLV servo mode is used.

The EFM demodulation block detects through WFCK/16 sampling whether or not the frame sync signal and the internal frame counter output are synchronized, and generates the status signal based on the sampling result, synchronized or non-synchronized. If eight consecutive "non-sync" signals are obtained, the system senses the status as "non-sync". If not, the system senses as "sync". In the applicable servo mode, the leading-in servo mode is automatically selected at the non-sync status, and the normal servo mode is at the sync status.

4) Brake

Used to stop the spindle motor.

In accordance with the microcomputer's command, the brake voltage is sent out from the servo LSI. At this moment, the EFM waveform is being monitored in this LSI. When the longest EFM pattern exceeds a certain cycle (or the rotation slows down enough), a flag is set inside the LSI, and the microcomputer switches off the brake voltage. If a flag is not set within a certain period, the microcomputer shifts the mode from the brake mode to the stop mode, and keeps this for a certain period. In the eject mode, after the mode is shifted to the stop mode and a certain period passes, the loaded disc is ejected.

5) Stop

Used when the power is turned on and during the eject mode. At this moment, the voltage through the spindle motor is 0V.

6) Rough servo

Used when the carriage is moved (or in the carriage move mode such as long search).

By obtaining the linear velocity from the EFM waveform, "H" or "L" is applied to the spindle equalizer. In the test mode, this mode is used for grating confirmation.

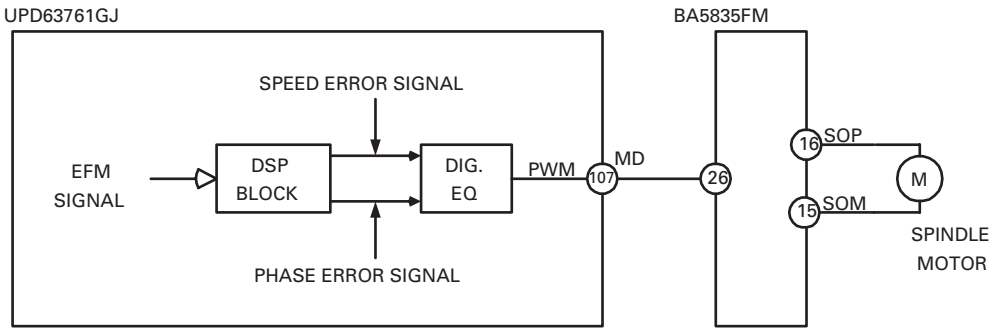


Fig.1.2.9 Block diagram of the spindle servo system

1.3 AUTOMATIC ADJUSTMENT FUNCTION

This system automatically handles the circuit adjustment inside the CD LSI. All adjustments are performed whenever a disc is inserted or the CD mode is selected by pressing the source key. Each adjustment will be explained below.

1.3.1 TE, FE, and RF offset auto-adjustment

This adjustment is made to adjust the offsets of the TE, FE, and RF amplifiers in the preamplifier block to their target values on the basis of the REFO when the power is turned on. (The target values for TE, FE, and RE offsets are 0V, 0V, and -0.8V respectively.)

<Adjusting procedures>

1) With the LD OFF status, the microcomputer reads each offset through the servo LSI.

2) The microcomputer calculates the voltages for correction from the measured values, and inputs the calculated results as the offset adjustment values.

1.3.2 Tracking balance (T.BAL) auto-adjustment

This adjustment is to equalize the pickup output offsets for E-ch and F-ch by changing the amplifier gain inside the LSI. Actually, the gain is adjusted so that the TE waveform becomes symmetrical on each side of the REFO.

<Adjusting procedures>

1) The focus loop is closed.

2) The lens is kicked in the radial direction to make certain that the TE waveform is generated.

3) The microcomputer reads the TE offset calculated in the LSI through the servo LSI.

4) The microcomputer takes either of the following steps depending on the calculated offset:

• When the offset is 0, the adjustment completes.

• When the offset is positive or negative, the amp gains for E-ch and F-ch should be changed.

The steps 2) to 4) are repeatedly taken until the offset becomes 0 or the repeating time reaches the limit frequency.

1.3.3 EF bias auto-adjustment

This adjustment obtains the best focus point during the play mode and maximizes the RFI level by utilizing the phase difference between the 3T level of the RF signal and that of the signal obtained when focus error disturbance is applied to the focus loop. At this moment, the auto-gain control (AGC), where focus error disturbance is applied to the focus and tracking loops, is also performed as explained below.

<Adjusting procedures>

1) The microcomputer transmits the command to apply disturbance component to the focus loop (inside the servo LSI).

2) In the LSI, the 3T-offset component of the RF signal is detected.

3) From the relation between the 3T detected component and the disturbance, the LSI obtains the volume and direction of the focus offset.

4) The microcomputer transmits the command and reads out the detecting result from the servo LSI.

5) The microcomputer calculates the necessary correction and inputs the result as the bias adjustment value to the servo LSI.

The adjusting steps are repeated a few times for higher adjustment accuracy as same as those for the AGC.

1.3.4 Focus and tracking AGC

This function automatically adjusts the focus and tracking servo loop gains.

<Adjusting procedures>

1) Disturbance component is applied to the servo loop.

2) The error signals (FE and TE) are extracted through the band pass filter as the G1 and G2 signals.

3) The microcomputer reads the G1 and G2 signals through the servo LSI.

4) The microcomputer calculates the necessary correction and performs the loop gain adjustment inside the servo LSI.

For higher adjustment accuracy, the above steps are repeated a few times.

1.3.5 RF level auto-adjustment (RFAGC)

This adjustment minimizes the dispersion of the RF level (RFO), which may be caused by disc-related errors, for more stable signal transmission by changing the amp gain between RFI and RFO.

<Adjusting procedures>

1) The microcomputer sends the command to the servo LSI to read out the output from the RF level detecting circuit inside the servo LSI.

2) The microcomputer calculates the appropriate amp gain by using the output read out to adjust the RFO level at the prescribed one.

3) The microcomputer sends the command to the servo LSI to adjust the amp gain into the calculated one.

This adjustment is automatically performed when:

1) During the setting-up mode, only the focus close operation ends.

2) Immediately before the setting-up ends (or right before the play mode starts)

3) During the play mode, the focus loop is locked again after unlocked.

1.3.6 Preamplifier gain adjustment

In this adjustment, when the reflected beams from disc surface are extremely weak (ex. when the lens is dirty, and a CD-RW is loaded), the whole gain in the RFAMP block (FE, TE, and RF amplifiers) is increased by +6dB or +12dB.

<Adjusting procedures>

When the system senses that the reflected beams from disc surface are extremely weak during the setting-up mode, the whole RFAMP gain is increased by +6dB or +12dB.

After the gain is changed, the setting-up mode is restarted.

If the whole RFAMP gain is always increased to the +6dB level in the play mode, the +6dB level will be employed at the starting of the setting-up mode from the next playback.

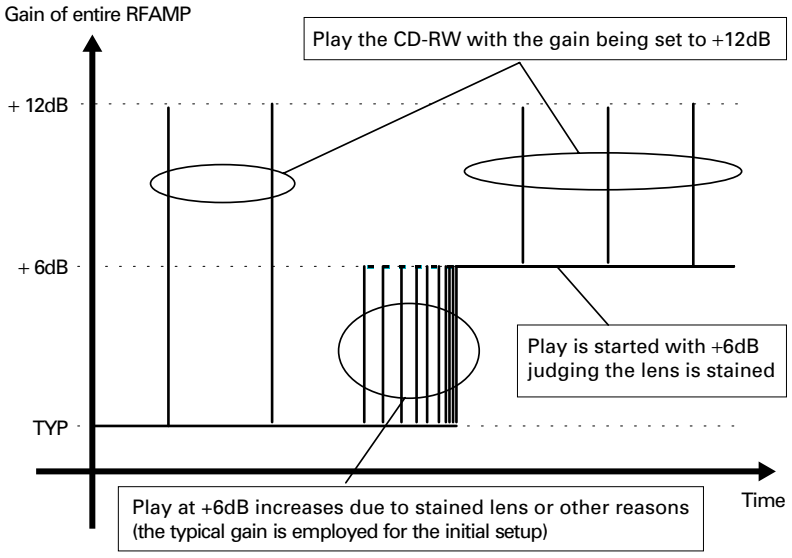

Gain of entire RFAMP
Play the CD-RW with the gain being set to +12dB
+ 12dB
+ 6dB
Play is started with +6dB
judging the lens is stained
TYP
Time
Play at +6dB increases due to stained lens or other reasons
(the typical gain is employed for the initial setup)

Fig.1.3.1 Pre-amp gain adjustment

1.3.7 Initial values in adjustment

For each auto-adjustment, the last adjustment results are basically used as the initial settings of the next adjustment unless the microcomputer is turned off (or the backup is off). When the microcomputer (or the backup) is turned off, the last adjustment results are not used, but the factory settings.

1.3.8 Adjustment result display

For some of the adjustments (FE and RF offset, FZD cancel, F and T gain, and RFAGC), the adjustment results can be displayed and confirmed in the test mode.

1) FE and RF offset

Reference coefficient = 32 ("32" indicates no adjustment required)

The display is expressed in the unit of about 32mV.

Ex. When the FE offset coefficient is 35:

35 - 32 = 3 x 32mV = 96mV

This means that the correction is about +96mV, and the FE offset before adjustment is -96mV.

2) F and T gain adjustment

Reference coefficient for focus and tracking = 20

The displayed coefficient / the reference coefficient indicates the adjusted gain.

Ex. When the AGC coefficient is 40:

40/20 = 2 times (+6dB)

That is, the gain was adjusted by +6dB.

(The original loop gain was half the target one. So, the whole gain was doubled.)

3) RF level adjustment (RFAGC)

Reference coefficient = 8

The coefficient 9 to 15 indicates increasing the RF level.

The coefficient 0 to 7 indicates decreasing the RF level.

When the coefficient display changes by 1, the gain changes by 0.7 to 1dB.

When the coefficient is 15, the gain is maximum or TYP + 6.5dB.

When the coefficient is 0, the gain is minimum or TYP - 6.0dB.

1.4 POWER SUPPLY AND LOADING BLOCK

The VD (8.3 ± 0.5V), the VD2 (5.6 ± 0.5V) and the VDD (5.0 ± 0.25V), which are supplied from the main unit, are used for the power supply. In this system, the following five power-supply signals are available: the VD (for the drive system), the V3R3 obtained from the VD2 via the 3.3V regulator (for the control system: 3.3V), the V1R5 (for the digital system: 1.5V), the VDD (for the microcomputer: 5V), and the 3VDD obtained from the VDD via the 3.3V regulator (for the microcomputer: 3.3V).

The microcomputer can turn on/off the CD driver (except for the load and eject modes) and the VD2 signal by controlling the "CONT" and "CD3VON" signals respectively. To turn on/off the loading drive, there is no control terminal in the microcomputer, but the "LOEJ" input signal works as the control one. In the LCO output block, the "CLCONT" signal is used to switch between the loading mode and carriage mode.

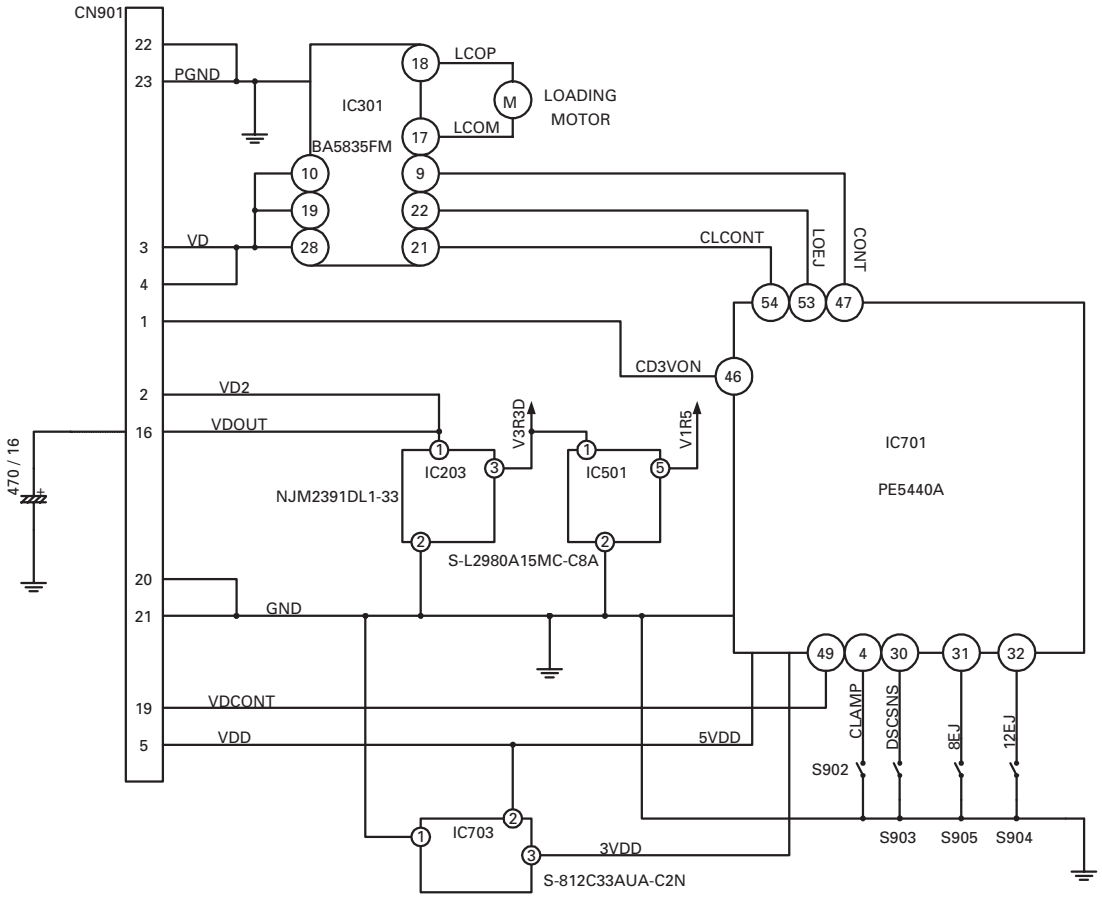


Fig. 1.4.1 Power supply/loading block

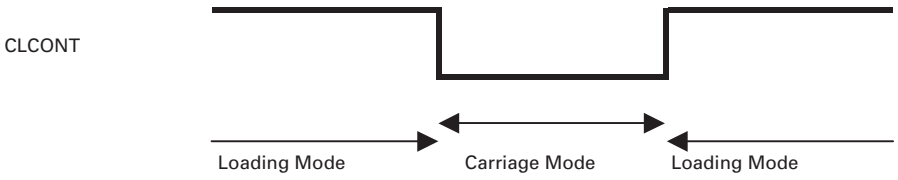
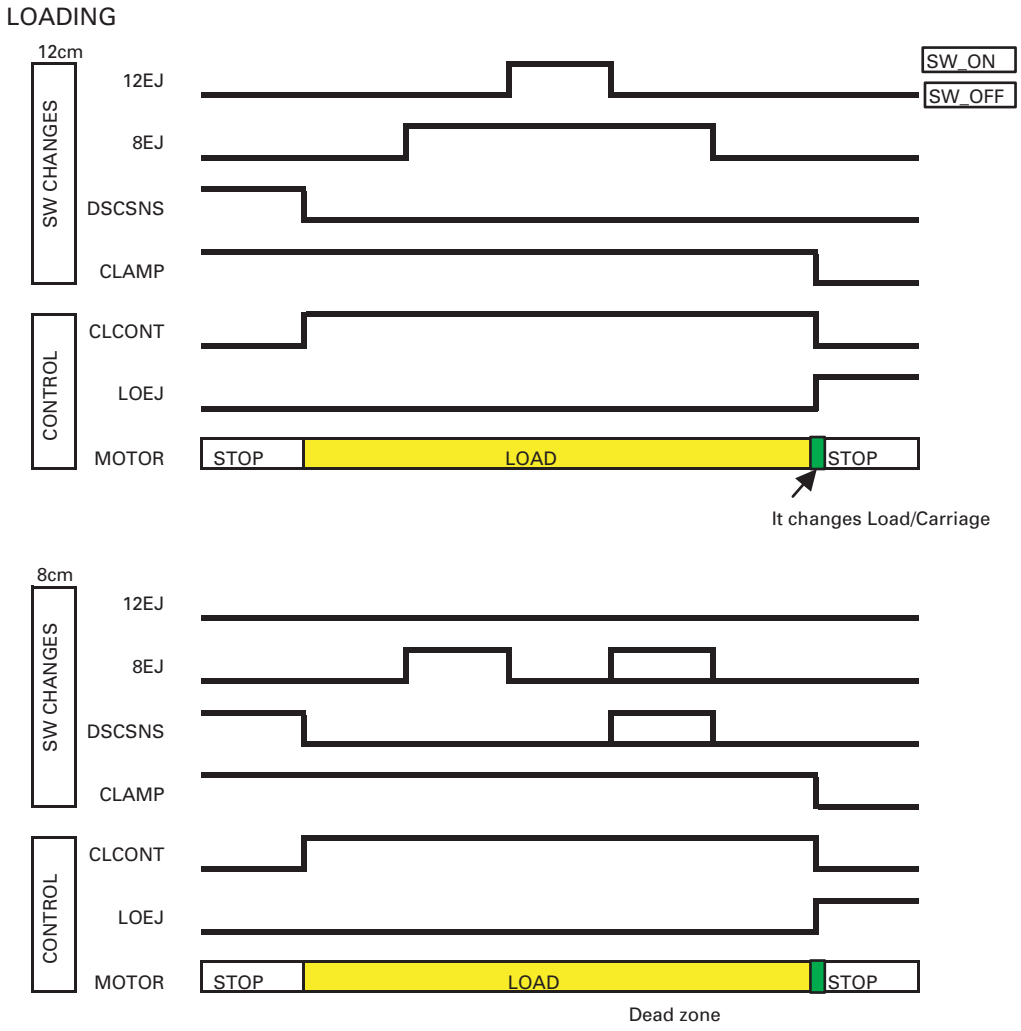


Fig. 1.4.2 Loading/carriage mode shift

To control the load and eject operations, the clamp switch located in the mechanism unit and the three detecting switches located in the control unit are used. Depending on the combination of these switches' ON/OFF status, the DSCSNS voltage changes.
The microcomputer can detect the status (A to E) by observing the voltage at the A/D port. The disc size detection (8 or 12cm) is also performed through this status change. The DSCSNS status and the status change in the load and eject modes are shown in the figures 1.4.3 and 1.4.4 respectively.

Status	A	B	C	D	E
SW1(S903)	ON	OFF	OFF	OFF	ON
SW2(S905)	OFF	OFF	ON	ON	OFF
SW3(S904)	OFF	OFF	OFF	ON	OFF
SW4(S902)	OFF	OFF	OFF	OFF	ON
Mechanism state	With no disk				Clamp state

Fig.1.4.3 DSCSNS status



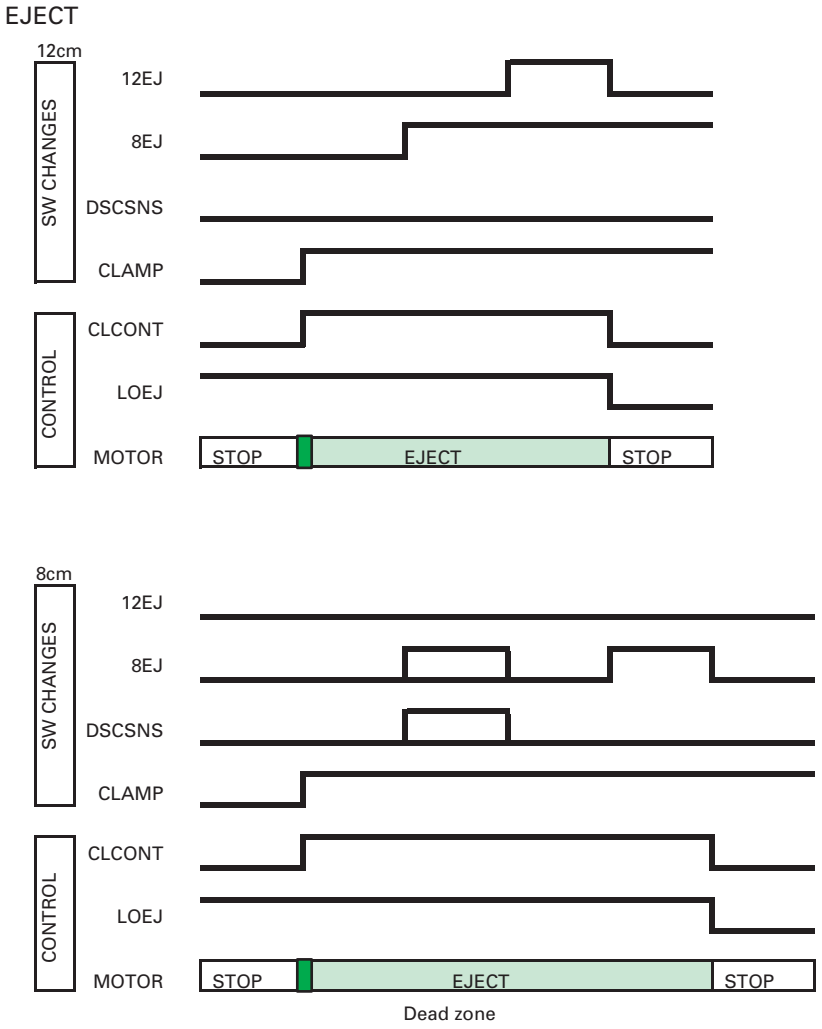
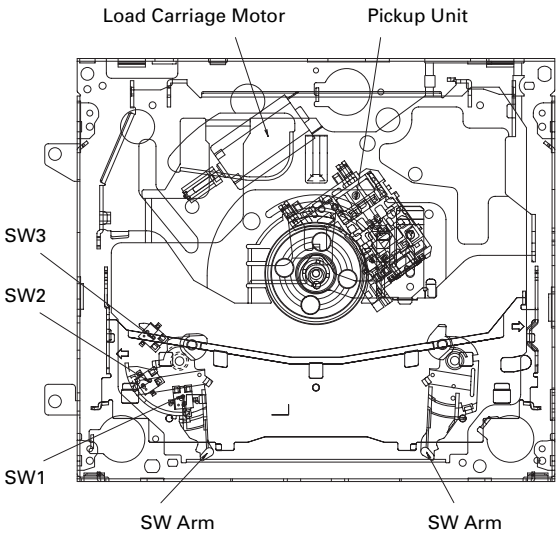


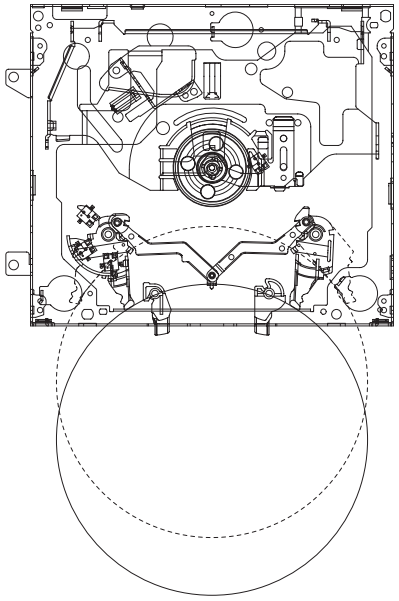
Fig.1.4.4 Status change in LOAD and EJECT modes

2. MECHANISM DESCRIPTIONS

● Loading actions

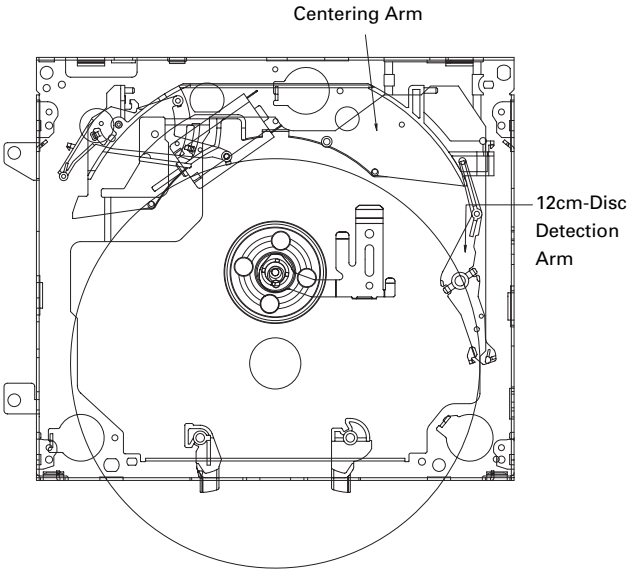
1. When a disc is inserted, SW Arm L and R rotate. Due to the rotation of Arm L, SW1 is switched from ON to OFF and the Load Carriage Motor starts.
2. If the disc is 12cm-disc, when it is carried to the position shown with the dotted line in the drawing, SW 3 switches to ON due to such rotation of Arm. Then, the microcomputer judges that the disc is 12cm-disc.
3. In case of 8cm-disc, the disc cannot reach such dotted line position, and from such limitation of approach, the microcomputer judges that the disc is 8cm-disc and simply triggers clamp actions.
   (Movement of SW Arm L and R are connected together. So, if pushing force is fed to only one arm, the distance between tow arms cannot be widened beyond the specific degree, because the coupling part is locked in such case.)

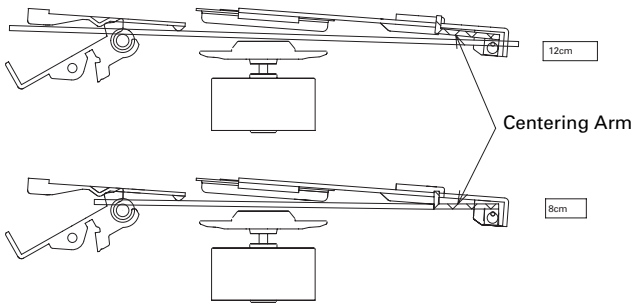




● Disc centering mechanism

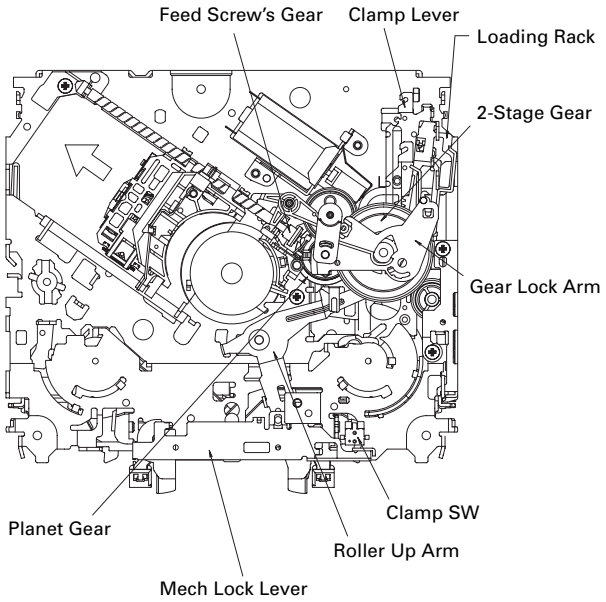
1. In case of 12cm-disc, the 12cm-Disc Detection Arm rotates, and with such rotation, it raises the Centering Arms to retreat the arms from disc's trace. The disc passes through under the arms, and at the inner part, it is centered.
2. In case of 8cm-disc, it is just centered at the position where its edge touches the front portion of the Centering Arm.

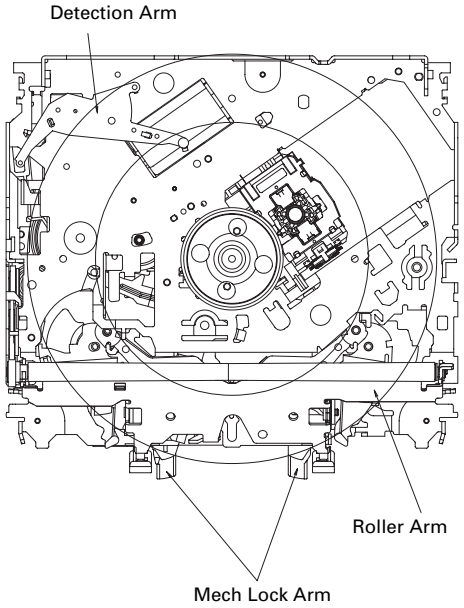




● Clamp actions

1. When an 8 or 12cm disc is placed on the center of the spindle, the detection arm starts moving.
2. The movement of the detection arm engages the loading rack with the 2-stage gear.
3. The clamp lever slides to lower the clamp arm. At this time, the roller up arm rotates to separate the roller arm from the disc. The roller arm moves the mech lock lever and turns the mech lock arm to release the mech lock. At the position where the clamp switch is turned off, the clamp operation ends.
4. After the clamp operation, the clamp lever moves to rotate the gear lock arm. The planet gear separates from the 2-stage gear to get engaged with the pickup feed screw's gear. Then the carriage operation will start.





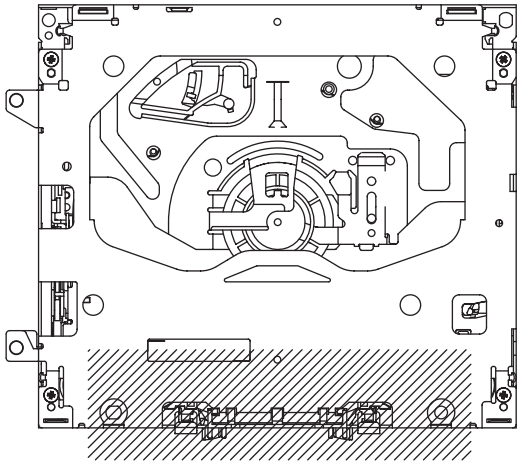
● Eject actions

1. Eject actions start when the Pickup is fed to the position inner than "Home SW ON" point in the internal circumference of the circle, caused by backward rotation of the Load Carriage Motor. Eject actions follow the foregoing procedures (steps taken in loading, centering and clamping actions), but each action in those steps is performed in reversed manner.
2. In case of 12cm-disc, Eject is completed when SW3 completes its condition- transition of OFF → ON → OFF.
3. For 8cm-disc, Eject is completed when SW2 completes its condition-transition of OFF → ON → OFF.

3. DISASSEMBLY

● How to hold the Mechanism Unit

1. Hold the top and bottom frame.
2. Do not squeeze top frame's front portion too tight, because it is fragile.

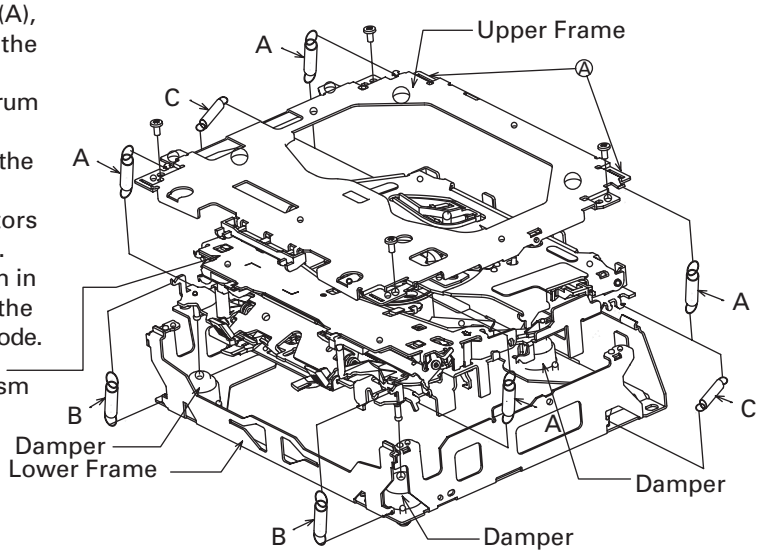


Do not squeeze.

● Removing the Upper and Lower Frames

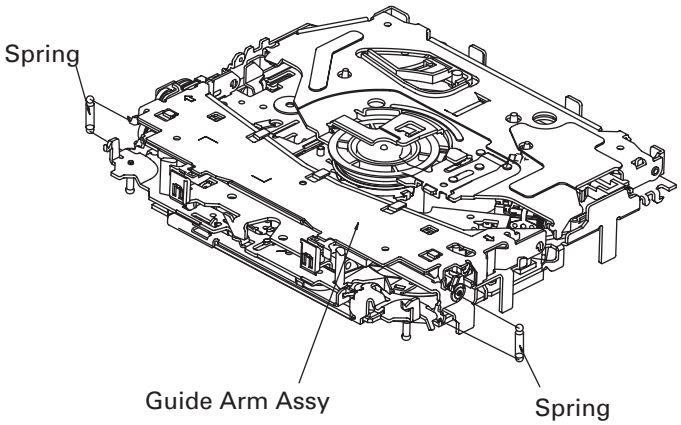
1. With a disc clamped, remove the four springs (A), the two springs (B), the two springs (C), and the four screws.
2. To remove the upper frame, open it on the fulcrum A.
3. While lifting the carriage mechanism, remove the three dampers.
4. With the frames removed, insert the connectors coming from the main unit and eject the disc.

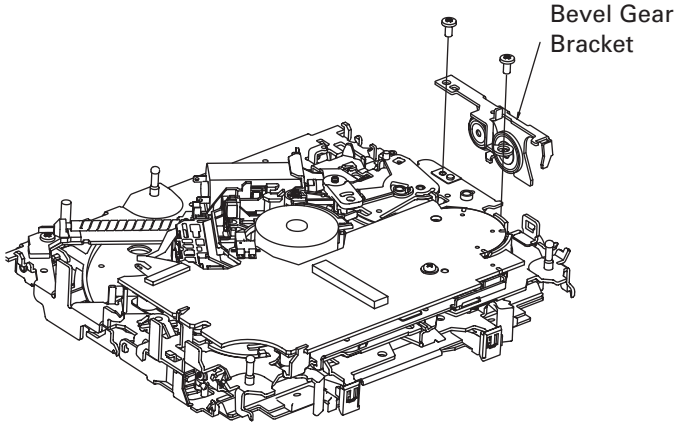
Caution: Before installing the carriage mechanism in the frames, be sure to apply some alcohol to the dampers and set the mechanism to the clamp mode.



● Removing the Guide Arm Assy

1. Remove the upper and lower frames and set the mechanism to the clamp mode.
2. Remove the two springs.
3. Remove the two screws and bevel gear bracket. Note that the gears come off.
4. Slide the guide arm assy in the direction marked with the arrow (1) and open it upwards.
5. At the angle of about 45 degrees, slide the guide arm assy in the direction marked with the arrow (3) to remove it.

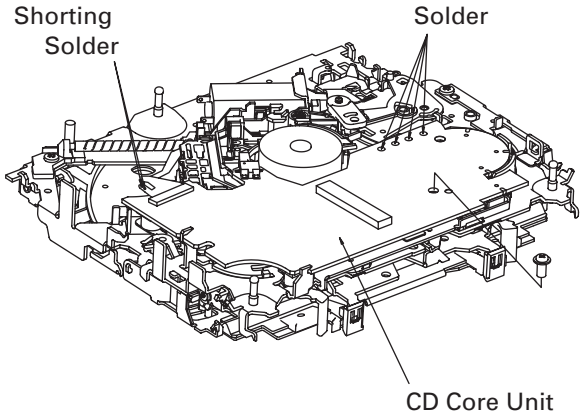




● Removing the CD Core Unit

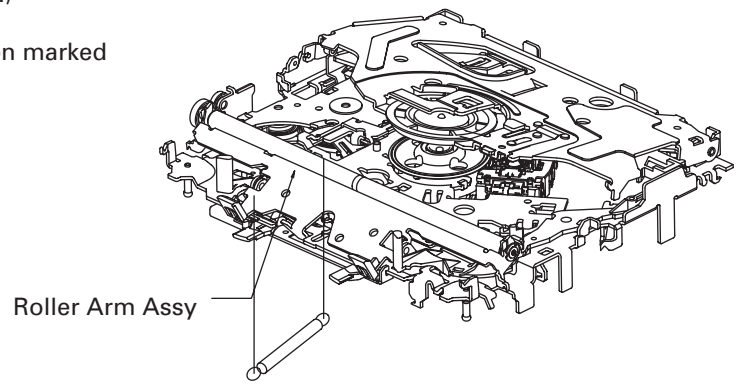
1. Apply shorting solder to the Pickup flexible cable. Disconnect the cable.
2. Remove the solder from the four leads, and loosen the screw.
3. Remove the CD core unit.

Caution: When assembling the CD core unit, set the mechanism to the clamp mode to protect the switches from any damage.



● Removing the Roller Arm Assy

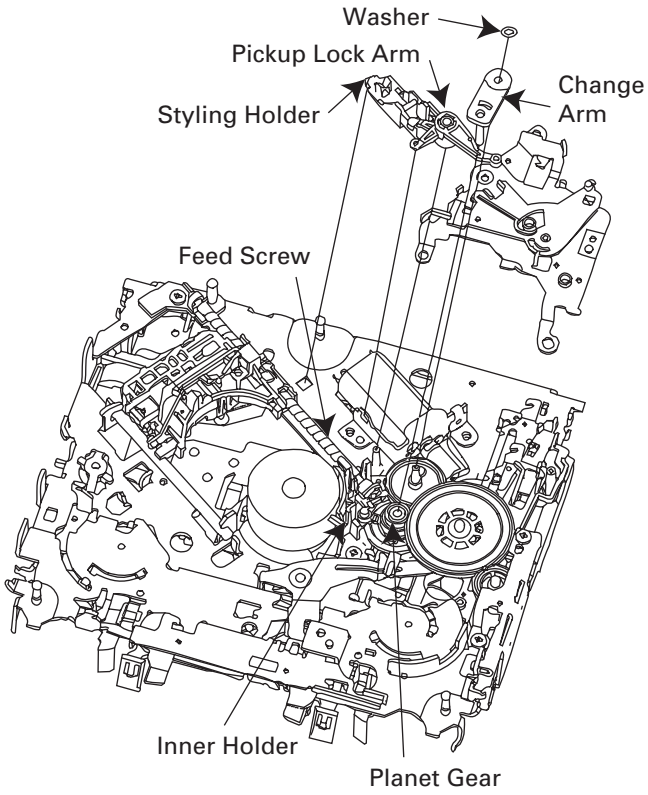
1. Remove the guide arm assy and set the mechanism to the eject mode.
2. Remove the CD core unit. (You do not have to remove the solder from the four leads.)
3. Remove the spring.
4. Slide the roller arm assy in the direction marked with an arrow.



● Removing the Pickup Unit

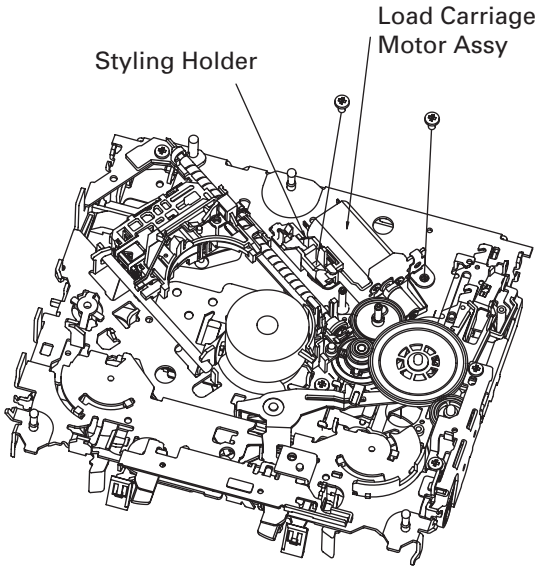
1. Set the mechanism to the clamp mode.
2. Remove the lead wires from the inner holder.
3. Remove the washer, styling holder, change arm, and pickup lock arm.
4. While releasing from the hook of the inner holder, lift the end of the feed screw.

Caution: In assembling, move the planet gear to the load/eject position before setting the feed screw in the inner holder.



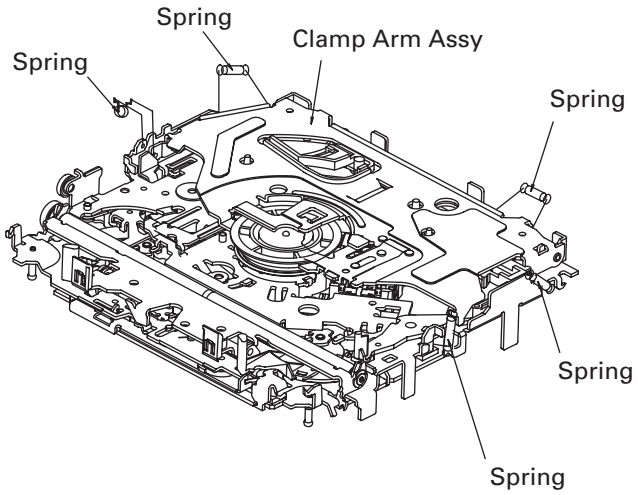
● Removing the Load Carriage Motor Assy

1. Release the leads from the styling holder and remove the holder.
2. Remove the two screws.
3. Remove the load carriage motor assy.



● Removing the Clamp Arm Assy

1. Remove the five springs.
2. While lifting the clamp arm assy, slide it in the direction marked with the arrow (2) to remove it.



● Removing the Spindle Motor

1. Remove the two screws. Take off the spindle motor.